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PERFORMANCE OF UP AGRICULTURE: STUDY OF TRENDS PATTERN AND CONSTRAINS

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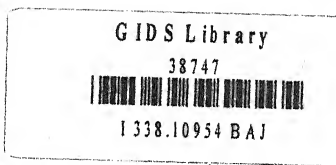
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PREFACE

The performance of agriculture in Uttar Pradesh holds paramount importance as the State economy is predominantly agrarian. Primary sector contributes more than one-third to the State income and provides employment to two-third of the total workers. This much contribution in terms of States income and employment makes agriculture sector important and calls for regular monitoring of this sector in the State. In the wake of progressively reducing share of agriculture sector in State income, it has become necessary to analyse the pace of agricultural growth and causes of its decline. Still the State ranks first in the country in production of foodgrains, wheat, sugarcane, potato, vegetables and milk, second in pulses and third in rice. Thus, overwhelmingly impacting the nation's total production of these major commodities. It produces 45 per cent of nations sugarcane, 42 per cent of potato and 35 per cent of wheat, underpinning the national trend of several major agricultural commodities. UP comprises the hub of the Indo-Gangetic Plains – one of the most fertile crescents of the world, endowed with excellent land and water resources, sunshine and congenial climate for agriculture.

Yet state of Uttar Pradesh ranks considerably below national averages in terms of various economic indicators. The performance of agriculture has not been as per expectations during the post reform period. In view of this, the study analyses the production and productivity data of major agricultural crops for the years ranging from 1975-76 to 2005-06 to compare the production and productivity growth during the pre and post-reform periods. The study also probes the farmers' profitability of cultivation and makes an attempt to adjudge the farmers' variability for cultivating some major crops in the State. Apart from this, major constraints have also been assessed in this context to suggest suitable policy framework for sustainable agriculture in Uttar Pradesh.

The study is primarily based on secondary data which has been made available from Central and State government publication. The data relating to production and area under different crops for the reference years has been procured from Directorate of Economics and Statistics, Government of Uttar Pradesh. Thorough checking of same data could be undertaken with the help of district-wise agricultural production records, which were made available by the Agriculture Directorate Government of Uttar Pradesh. The estimates of Profitability of major crops could be made through the use of data of material input, operational cost, paid out cost and other costs, which was available only in CACP publication.

The credit of initiating this study goes to Professor A.K Singh, Director, Giri Institute of Development Studies who has approved the study for internal funding through Giri Institute of Development Studies. He has been kind enough to help me through providing required research insights in course of completion of this study.

I feel obliged to my colleagues Dr. G.S. Mehta and Dr Sanatan Nayak for their support and suggestions while handling CACP data for undertaking this study. I am thankful to Mrs Pratima Ghosh for her continuous help and support in data processing, computation and analysis. I am also thankful to my research staff members, Ms Shailja Tiwari, Mrs Manisha Singh, Mr Ajay Kumar Singh and Mr Ajay Kumar Dubey for their continuous hardwork to complete the report.

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CHAPTER I

INTRODUCTION

1.1 About the Study

The serious debate and concern have been raised on the issue of worsening economic conditions of the farmers. This has led to the rising cases of suicides by the farmers linked with their indebtedness. The Situation Assessment Survey of the farmers of the NSSO, 2003 has reported that 40 per cent of farmer households (41 per cent households in UP) were of the view that given the choice, they would shift to some other activity, while 27 per cent of the households did not find farming a profitable venture. This indicates towards a serious problem wherein the main protagonist is suffering from low self-esteem and does not believe that his work is worthwhile economically or even socially. In the social hierarchy, farming as a profession now figures considerably in the social order.

In fact the liberalization has made things worse: commercial crops are eating into the fertile land tracts meant for essential food grains. And years after the World Trade Organization came into existence; the anticipated gains for India From the trade liberalization process in agriculture are practically zero.

Before entering into the present crisis in the agriculture sector, let us consider the peculiarities of the Indian agriculture.

1. At all India level, 78 per cent of the farming population owning 32 per cent of the area operated is small and marginal farmers, of which 59.4 per cent owning 15 per cent of the area operated, are marginal farmers with average holding size of 0.37 hectares. The average size of holdings is declining gradually in Uttar Pradesh. As per available data, 75.4 per cent holdings are of less than one hectare and are marginal farmers. The average holding size of 90 per cent of small and marginal farmers is about 0.55 hectares. For these farmers agriculture is merely subsistence.
2. Agriculture operations are largely dependent on the vagaries of nature. Even today only 40 per cent of the net sown area of 142.8 million hectares in India has assured irrigation. Hence for majority of the farmers the activity is a gamble against the monsoon. With intermittent failures of the monsoons and other customary vicissitudes of farming, rural indebtedness has been a serious and continuous characteristic of Indian agriculture.

3. The Indian farmers, majority being small and marginal farmers, do not have the resources to hold on to the produce to fetch reasonable returns and hence are exploited by the traders. They are forced to sell their produce immediately after harvest at low prices and to purchase it at later date at high prices. It is evident from the fact that while in most of the countries, one-third of the market prices of commodities are realized by the farmers, in India only one-fifth of the prices goes to the kitty of the farmers and balance is pocketed by the middlemen. Even the Government's Price Support Mechanism has not been of much help to the farmers.

In fact, such conditions of the farmers have brought gradual decline in agricultural productivity, production and profitability. The problems of the farm sector have aggravated in the post liberalization era and today the sector is in a crisis. Farmers' suicides are taking place quite often. Rural indebtedness is a subject being talked at every nook and corner of the country. The pace of agriculture growth is not keeping pace with other sectors. It is reported that the food security we achieved as a result of the Green Revolution has vanished and shortly the country will have to import food grains to feed its population. Apart from the reasons mentioned above the other factors contributed to the situation are summarized below.

1. Productivity growth and profitability have declined in the crop sector. Farming is becoming a non-viable activity in many parts of the country, especially in the case of cereals.
2. The decline in the profitability has forced many farmers growing food grains to keep the land vacant or convert into non-agricultural land or to turn to cultivation of more profitable crops. This may, in the short run, lead to a dangerous situation wherein the country has to depend on foreign countries/ multinationals for feeding its population which ultimately may adversely affect the country's independent stand on international issues.
3. The small and marginal farmers shifting to cash crops have aggravated the distress condition of the farmers. The high cost of cultivation, the inadequate knowledge of the various aspects of cultivation, coupled with the crop failure had virtually driven many farmers to the verge of penury.
4. There has been a sharp increase in the unemployment rate among agricultural labor households from 9.5 per cent in 1993-94 to 15.3 per cent in 2004-05. This has an

impact on the income generation of rural farmer household as the "Income, Expenditure and Productive Assets of Farmer Households" published by NSSO shows that 39 per cent of the average annual income of a farmer is from wages.

5. The removal of restrictions on import of certain commodities led to a situation of dumping of cheaper commodities to the country, especially in the case of plantation crops, putting the farmers in great unexpected distress.
6. The over dependence of farmers on the informal credit delivery system has added to the indebtedness of rural population. As per the NSS data, 56 per cent of the indebted farmer households obtained loans from formal sources while 44 per cent are from informal sources.

In Uttar Pradesh, out of 17.16 million farmer households, 6.92 million (40.3 per cent) were reported to be indebted, while for the country as a whole, 48.6 per cent (43.42 million) of 89.35 million farmer households were indebted. Estimated prevalence of indebtedness among farmer households was recorded to be highest in Andhra Pradesh (82 per cent) followed by Tamil Nadu (74.5 per cent) and Punjab (65.4per cent). In UP households with one hectare or less land accounted for 74 percent of all farmer households and about 39 per cent of them were indebted.

At all India level, more than 50 per cent of indebted farmer households had taken loan for the purpose of capital or current expenditure in farm business. Such loans accounted for 584 rupees out of every 1000 rupees of outstanding loan. In Uttar Pradesh indebted farmer households which had taken loan for the purpose of Capital or Current expenditure in farm business accounted for 609 rupees out of every 1000 rupees of outstanding loan. Marriage and ceremonies accounted for 118 rupees per 1000 rupees of outstanding loans of farmer households in Uttar Pradesh.

Banks (51 per cent) followed by moneylenders (19 per cent) were most important source of loan in terms of percentage of outstanding loan amounts in Uttar Pradesh while for country as a whole, the corresponding figures were 36 percent and 26 percent respectively. Average outstanding loan per farmer household was highest in the state of Punjab (Rs 118495) followed by Kerala (Rs 100832), Haryana (Rs 23555), Andhra Pradesh (Rs 12760) and Tamil Nadu (Rs 11023). Average outstanding loan per farmer household was Rs 6706 in Uttar Pradesh. The loan waiver of UPA Government in last Union Budget could not mitigate the farmers' plight to the expected level in the country in general and in UP in particular as high

proportion of the farmers' loans are raised through informal sources like moneylenders and others.

One of the major deficiency or road block exists in our Rural Credit Policy - Credit production need including capital investments like tractors, Pumps etc but fails to recognize the consumption needs of a farmer. A farmer having planted his crop while tends and waits for the harvest, the family needs money for food and other things. Often production loan is diverted or pushes the farmers to private money lenders.

Corruption and impractical needs like collateral by PSU Banks - Rural credit a failure. What Prof. Yunus could think in Bangladesh, we did not. He was driven by passion to assist the rural population; we were working as officers/Managers.

7. The high incidence of poverty, uselessness and risky business proposition has forced many commercial banks to adopt a cautious approach in regard to rural finance, especially financing of small and marginal farmers, in the post financial sector reforms era because of the fear of Non-performing Assets. The cooperatives which were to a greater extent meeting the requirements of such farmers were plagued with many problems restricting their ability and capacity to lend.

Because of the reasons listed above, the economic condition of farmers has deteriorated. On the other side, non-agricultural sector has shown a growth of 6 per cent. This increasing disparity between per capita income of agriculture and non-agricultural sector has raised the social disorder in the farming class.

The specific scenario of agriculture in Uttar Pradesh presents the similar conditions. Agriculture sector (including mining) contributed 36.8 per cent to the state income in 2003-04 and provided employment to 66 per cent of total workers. But gradually, the share of this sector in state income has been progressively reducing. Data released by NSSO also bring to the fore certain important facts about farmers, farming community and their awareness level of government initiatives taken in agriculture sector. Awareness level of UP farmers is close to the all India figures in respect of bio- fertilizers, crop insurance etc. While at all India level, about 18 per cent of farmers house holds knew what bio-fertilizers were and 29 per cent understood what minimum support price meant, in U P these figures were 15 per cent and 33 per cent respectively. At all India level only 4 per cent of farmers house holds had ever insured their crops and 57 per cent did not know about crop insurance. In

case of U P only 1.2 per cent of farmers households had ever insured their crops and 56 per cent were unaware about crop insurance. These figures clearly indicate that the extension activities in the state are at very low level and need to be revamped.

At all India levels, the present actual investment in agriculture sector is only 1.3 per cent of total gross domestic product (GDP). The position is not much better at the state level either. The percentage of expenditure in agriculture and allied sector has declined over the plan period from a high of about 29 per cent during second Five Year Plan and Annual Plans of 1966-69 to a low of 5.47 per cent during Sixth Five Year Plan and nearly 8.6 per cent during Tenth Plan.

1.2 Objectives of the Study

As the conditions of farm sector and farmers in different regions of Uttar Pradesh are found to be almost same as outlined above for India as a whole, the prospects of agriculture have been proposed to be seen in the context of emerging economic condition of farmers and profitability of agriculture in the state. The study also proposes to critically analyzing the pattern of development and trends in productivity and profitability and examining whether U.P. agriculture meets the requirements of sustainable agriculture. In the light of the above, following are the objectives of the proposed study:

1. To take stock of agricultural growth during the pre and post reform period in order to have an idea about the increase in area, production and yield of principal crops in the state during the reference period.
2. To examine the trends in profitability of major crops (wheat, paddy and sugarcane) and its impact on agricultural investment and growth.
3. To assess the major constraints in agriculture in Uttar Pradesh.
4. To suggest suitable agricultural policy framework for sustainable agriculture in Uttar Pradesh.

1.3 Data and Methodology

The study would be based on secondary data which is to be made available from centre and state government publications. The trend analysis to depict growth in production and yield of agricultural crops would be based on the secondary data. The reference years for depicting growth during the pre and post reform period would be from the year 1975 to 1990 and from the year 1991 to 2005 respectively. For identification of the growth areas in

the state, districts would be categorized as per their growth levels during the reference period. The constraints in agriculture are proposed to be measured in terms of the following; size of the landholdings, irrigation facilities, quality of land and credit flow to the small holdings. The secondary data would be collected from the Directorate of Economics and Statistics and Agriculture Directorate, Uttar Pradesh. The estimates of profitability would be made through the calculation of material input, operational cost, paid out cost, value addition, family income and net returns. For the computation of these estimates, the publications of CACP would be used. The suitable statistical tools are proposed to be used for the interpretation of results as per need from the relevant data.

There would not be any primary data collection for the study but it is proposed that some personal interviews based on interaction with the farmers, bankers and policy makers would be conducted in order to find out the relevant issues in this respect.

CHAPTER II

AGRICULTURE GROWTH IN UTTAR PRADESH

2.1 Production Growth of Major Agricultural Crops

The growth of agricultural production in the State has been observed to be spectacular during the past three decades (1975-76 to 2005-06). The picture of increased production of principal crops during this period can be visualized from Table 2.1. An analysis of Table 2.1 indicates that during the last three decades, the production of most of the agricultural commodities had a significant increase in the State except the production of pulses. Wheat production in the State has increased by two and a half time, from 10498021 MT in 1975-76 to 24089774 MT in the year 2005-06. Rice production increased by three times, from 3941563 MT to 11741489 MT, during this period. The total cereal production showed an increase of 145.51 per cent, which is higher than the percentage population growth of the State during this period. Similarly, production of edible oilseed and sugarcane showed an increase of 77 per cent and 115 per cent during this period.

Table-2.1 Level of Agricultural Production in U.P (Production in MT)

| Period | Rice | Wheat | Total Cereals | Pulses | Oilseeds | Sugarcane |
|---------------------|----------|----------|---------------|---------|----------|-----------|
| 1975-76 | 3941563 | 10498021 | 15836677 | 2637490 | 496304 | 56301430 |
| 1990-91 | 9571338 | 17780657 | 31121371 | 2736549 | 832870 | 97209744 |
| 2005-06 | 11741489 | 24089774 | 38880989 | 2205398 | 878258 | 120960643 |
| Percentage Increase | | | | | | |
| 1975-76 to 1990-91 | 142.83 | 69.37 | 96.51 | 3.75 | 67.81 | 72.65 |
| 1990-91 to 2005-06 | 22.67 | 35.48 | 24.93 | -19.40 | 5.44 | 24.43 |
| 1975-76 to 2005-06 | 197.88 | 129.46 | 145.51 | -16.38 | 76.95 | 114.84 |

The increased production of agricultural commodities during this period could be attained due to significant changes which were made in this sector. They were related to the expansion of irrigated area, use of chemical fertilizer and application of HYV seeds and innovative agricultural technology. In fact these practices were taken up during the period of Green Revolution in the State and their use was spread from Western region to Central and Eastern regions of the state in due course of time.

The benefit of innovative agricultural practices did not percolate toward pulse crops as these were not suited to pulse crops in the State. As a result of this, pulse production in the State has witnessed a decline of 16.38 per cent during this period. The increased production due to innovative agricultural practices had given boost to cereal and other commercial crops. This has led to a shift from pulse cultivation to other crops in the State.

Data presented in Table 2.1 further indicates that despite an overall increase in the production of rice, wheat, total cereals, oilseeds and sugarcane during the period 1975-76 and 2005-06, a lower rate of increase in production during post reform period as compared to the pre reform period was witnessed. The increase in rice production has been 142.83 per cent during 1975-76 and 1990-91 as against only 22.67 per cent during 1990-91 and 2005-06. In case of wheat production, the increase of 69.37 per cent was registered during pre reform period, this had come down to 35.48 per cent during post reform period in the State.

Uttar Pradesh being the largest sugarcane producing State in the country contributes 44 per cent to the country's total sugarcane production. At the same time UP is the largest producer of sugar in the country. About 22.50 lakh hectare has been under sugarcane cultivation and more than 1200 lakh tones of sugarcane was produced in the State in 2005-06. Average yield of sugarcane has increased from 328.12 quintals per hectare in 1975-76 to 551.77 quintals per hectare in the year 1990-91 and from this level close to 600 quintals per hectare during the year 2005-06.

Thus, sugarcane production grew at 72.65 per cent during pre reform period and reduced to only 24.43 per cent during post reform period. There was a drastic decline in oil seed production during the post reform period in U.P. It has come down to only 5.44 per cent during this period as compared to 67.81 per cent increase in production of oilseeds during pre reform period. The production of pulses which has already declined to 16.38 per cent during pre reform period, further declined to about 20 per cent during post reform period. In fact economic reforms initiated since 1991 were expected to make a significant impact on the prospects of agriculture sector. One of the important premises of economic reforms was its supposedly pro-agriculture bias. Many economists displayed great optimism about the future of the agricultural sector due to the high export potential and comparative advantage in trade of the agricultural goods (Richa Singh, 2006). Economists anticipated positive impact on domestic production and supply of agricultural goods through price gains and a favourable impact on rural employment due to the high labour intensity of the sector (Rao 1994). Higher prices and favourable impact of institutional factors was expected to increase efficiency of production and increase private investment in agriculture. Contrary to these expectations, agricultural growth has gone down drastically in India including Uttar Pradesh during the post-reform period.

2.2 Region-wise production growth of Major Agricultural crops

A region-wise picture of agriculture production growth of major crops in Uttar Pradesh during the post reform period is presented in Table 2.2 to Table 2. of this section. In case of paddy crop, the average increase over the years 1975-76 and 2005-06 was recorded to be about 198 per cent at the State level. Out of this, the average increase in the highest paddy production was witnessed in Western region (225.67 per cent) followed by Central and Eastern regions (211.61 per cent and 189.48 per cent respectively) of the State. The paddy production has been far higher during the reform period as compared to the post reform period in all the regions of the State. In case of Bundelkhand region the production, of paddy crop during pre-reform period has been almost significant. Whereas this has reduced to the tune of 36.43 per cent during the post reform period (Table 2.2). The post- reform period witnessed a lower rate of increase in paddy production in rest of the three regions as compared to pre reform period. However, the highest increase was registered in Western region. This was followed by Central and Eastern region

Table -2.2 Region-wise Level of Agricultural Production in U.P (Paddy) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|-----------------|--------------------|--------------------|--------------------|----------------------|
| 1975-76 | 93468 (2.37) | 745570 (18.92) | 2058769 (52.23) | 1043756 (26.48) | 3941563 (100.00) |
| 1990-91 | 93404 (0.98) | 1903973 (19.89) | 5106956 (53.35) | 2467005 (25.77) | 9571338 (100.00) |
| 2005-06 | 59378 (0.50) | 2323247 (19.79) | 5959665 (50.76) | 3399199 (28.95) | 11741989 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | -0.07 | 155.38 | 148.06 | 136.36 | 142.83 |
| 1990-91 to 2005-06 | -36.43 | 22.03 | 16.70 | 37.79 | 22.68 |
| 1975-76 to 2005-06 | -36.48 | 211.61 | 189.48 | 225.67 | 197.89 |

The wheat production in different regions of the state has increased significantly over the years 1975-76 and 2005-06. The increment in wheat production was also found to be higher during pre reform period than post reform period considering the State average production. The pre reform period registered a higher increase also in Central and Eastern regions. But in case of Western and Bundelkhand region the increase was higher during the post reform period (Table 2.3). The highest increase in wheat production was registered in Bundelkhand region (132.99 per cent) followed by Central region (44.22 per cent) in the State. The wheat production grew at a faster rate in Western region during post-reform period, also registered higher increase taking into account state average, but it was lower

than Central and Bundelkhand regions. The Eastern region showed a lowest growth of wheat production in the state during this period (Table 2.3).

Table-2.3 Region-wise Level of Agricultural Production in U.P (Wheat) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|-------------------|--------------------|--------------------|---------------------|----------------------|
| 1975-76 | 530806 (5.06) | 1343225 (12.79) | 2245186 (21.38) | 6378804 (60.76) | 10498021 (100.00) |
| 1990-91 | 535701 (3.08) | 3068300 (17.65) | 5844567 (33.63) | 7932089 (45.63) | 17380657 (100.00) |
| 2005-06 | 1248109 (5.18) | 4425050 (18.37) | 7459313 (30.96) | 10957302 (45.48) | 24089774 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | 0.93 | 128.43 | 160.32 | 24.35 | 65.57 |
| 1990-91 to 2005-06 | 132.99 | 44.22 | 27.63 | 38.14 | 38.61 |
| 1975-76 to 2005-06 | 135.13 | 229.44 | 232.24 | 71.78 | 129.47 |

The region-wise growth of cereal production in the State is presented in Table 2.4. The region-wise data of cereal production during the periods 1975-76 and 2005-06 showed the highest increase of 160.08 per cent in Central region. It was followed by the regions of Eastern, Western and Bundelkhand respectively. The wheat production grew at 145.52 per cent during 1975-76 and 2005-06 at the State level. However, the increment in cereal production at the State was higher (96.52 per cent) during pre reform period than the increment (24.94 percent) during post reform period. At the regional level also, the growth of cereal production was higher during pre reform period as compared to the post reform period in each of the region. It was found to be highest (113.11 per cent) during pre reform period in Eastern region, followed by Central and Western regions. The lowest (50.54 per cent) being in Bundelkhand during this period. The highest increment in terms of cereal production (29.58 per cent) was attained in Central region followed by Western (29.37 per cent) and Eastern (19.51 per cent) regions during the post reform period. The lowest increase (11.60 per cent) was registered in Bundelkhand region during this period (Table 2.4). The total volume of cereal output was recorded to be the highest in Western regions during the pre and post reform periods, despite relatively low output growth as compared to other regions of the State.

Table-2.4 Region-wise Level of Agricultural Production in U.P (Total Cereals) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|-------------------|--------------------|---------------------|---------------------|----------------------|
| 1975-76 | 874063 (5.52) | 2737165 (17.28) | 5504651 (34.76) | 6720798 (42.44) | 15836677 (100.00) |
| 1990-91 | 1315807 (4.23) | 5493597 (17.65) | 11730832 (37.70) | 12581135 (40.42) | 31121371 (100.00) |
| 2005-06 | 1468350 (3.78) | 7118585 (18.30) | 14018823 (36.06) | 16275231 (41.86) | 38880989 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | 50.54 | 100.71 | 113.11 | 87.20 | 96.52 |
| 1990-91 to 2005-06 | 11.60 | 29.58 | 19.51 | 29.37 | 24.94 |
| 1975-76 to 2005-06 | 68.00 | 160.08 | 154.63 | 142.17 | 145.52 |

The relative contribution in total states cereal output as presented in Table 2.4 showed that Western region contributed 42.44 per cent of total cereal production during 1975-76. This has come down to 40.42 per cent during 1990-91 and marginally increased to 41.86 per cent of total states cereal production during 2005-06. The highest cereal production in Western region was attained on account of highest volume of wheat production in this region during pre and post reform period (Table 2.4). The second highest contribution of cereal production in the State was seen in Eastern region. It was found due to region's highest contribution in state's paddy production. The contribution of Eastern region's paddy output in State output ranged from more than 53 per cent to about 51 per cent during pre and post reform periods. The share of cereal output in the State has been declining throughout this period. The share of Central region in State cereal output has increased marginally over the years from 17.28 per cent in 1975-76 to 18.30 per cent during the year 2005-06. As against this, the contribution of Western region has declined marginally over the years. The share of Eastern region in total states cereal production has been on the increase during this period.

As against cereal crops, the production of pulses has not been satisfactory in the State. There has been a negative growth of pulse output in the State over the years 1975-76 and 2005-06. The state witnessed a decline of 16.39 per cent in pulse output during this period (Table 2.5). In fact there has been a deceleration in pulse output during the post reform period as against expectations. Data indicate that the state pulse production grew at 3.76 per cent during the years 1975-76 and 1990-91. It has declined by 19.41 per cent during the period 1990-91 and 2005-06.

Table-2.5 Region-wise Level of Agricultural Production in U.P (Pulses) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|--------------------|-------------------|-------------------|-------------------|---------------------|
| 1975-76 | 476626 (18.07) | 609256 (23.09) | 809318 (30.68) | 742294 (28.14) | 2637494 (100.00) |
| 1990-91 | 893563 (32.65) | 511222 (18.68) | 801683 (29.29) | 530081 (19.37) | 2736549 (100.00) |
| 2005-06 | 1037888 (47.06) | 392071 (17.78) | 551710 (25.01) | 223729 (10.14) | 2205398 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | 87.48 | -16.09 | -0.94 | -28.59 | 3.76 |
| 1990-91 to 2005-06 | 16.16 | -23.31 | -31.19 | -57.80 | -19.41 |
| 1975-76 to 2005-06 | 117.76 | -35.65 | -31.83 | -69.86 | -16.39 |

A regional level picture of pulse output further shows that the only region of Bundelkhand in the state observed a positive growth of pulse production throughout this period. It has increased at 87.48 per cent during the years 1975-76 and 1990-91 in Bundelkhand. During the post reform period (1990-91 to 2005-06) also production grew at a slower rate i.e., 16.16 per cent. In rest of all three regions the pulse output declined during both the periods. The highest decline of 69.86 per cent was recorded in Western region throughout this period, i.e., 1975-76 and 2005-06. In Central and Eastern regions the pulse output decline by 35.65 per cent and 31.83 per cent respectively during the same period. Only in Bundelkhand it grew at 117.76 per cent. In all the three regions the rate of output decline in pulse crops was found to be sharper during the post reform period as against pre-reform period.

The share of different regions in State pulse production varied from one reference year to another. For example, the highest share of 30.68 per cent in total pulse output was recorded in Eastern region during the year 1975-76. The second largest share of 28.14 per cent during this year was in Western region. Central region occupied the third position in this respect with 23.09 per cent of state pulse output. Bundelkhand had only 18.07 per cent share in pulse output of the State. As against this, the contribution of Bundelkhand in total State's pulse output grew highest (32.65 per cent) during the year 1990-91. The lowest share in pulse output was recorded in Central and Western regions (18.68 per cent and 19.37 per cent respectively) during this period. The reasonably high contribution of about 30 per cent was recorded in Eastern region during this period (Table 2.5). The largest share of Bundelkhand in State pulse production was maintained during the year 2005-06. Rather the highest share of this region rose to more than 47 per cent of total state output. Eastern

and Central regions occupied the second and third positions in this respect. The lowest contribution of about 10 per cent of total pulse output was made by Western region during the year 2005-06.

The oilseed production of the state which was 496304 MT in the year 1975-76, rose to 878258 MT during the year 2005-06, thereby registering an increase of about 77 per cent during this period. While dividing the growth of oilseed output into pre and post reform periods, it is revealed that the oilseed output grown at a faster rate during the pre reform period than post reform period in the State. The growth of output was as high as 67.82 per cent during the years 1975-76 and 1990-91. It came down to 5.45 per cent during the years 1990-91 and 2005-06 (Table 2.6).

Table-2.6 Region-wise Level of Agricultural Production in U.P (Oilseeds) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|-----------------|-------------------|-------------------|-------------------|--------------------|
| 1975-76 | 26738 (5.39) | 185046 (37.28) | 43801 (8.82) | 240719 (48.50) | 496304 (100.00) |
| 1990-91 | 53229 (6.39) | 154312 (18.53) | 67824 (8.14) | 557505 (66.93) | 832870 (100.00) |
| 2005-06 | 80268 (9.14) | 174166 (19.83) | 108324 (12.33) | 515500 (58.69) | 878258 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | 99.08 | -16.61 | 54.85 | 131.60 | 67.82 |
| 1990-91 to 2005-06 | 50.80 | 12.87 | 59.72 | -7.54 | 5.45 |
| 1975-76 to 2005-06 | 200.21 | -5.88 | 147.31 | 14.15 | 76.96 |

A region-wise analysis of oilseed crop production in Uttar Pradesh showed highest production increment in Bundelkhand region. But at the same time oilseed output share of this region in total states oilseed production has been the lowest as compared to other regions. The output share which was 5.39 per cent in 1975-76 has increased to 6.39 per cent in 1990-91 and finally to 9.14 per cent of States output in the year 2005-06. It has further risen to about 67 per cent in the year 1990-91. In the year 2005-06 also the share has been about 59 per cent of the total states oilseed output. The increase of oilseed output in this region has been about 14 per cent during the year, 1975-76 and 2005-06. But the actual growth was attained in oilseed production (131.60 per cent) only during the years 1975-76 and 1990-91 i.e., during the pre reform period. Oilseed production during post reform period in this region has declined by 7.59 per cent (Table 2.6).

The second largest production of oilseed crops turned out to be Central region in the state. The share of oilseed production of this region in State stood at about 20 per cent

during the year 2005-06. This was little lower (18.53 per cent) during the year 1990-91. But Central region had a far higher share (37.28 per cent) in this respect in the year 1975-76. Thus, there was a decline in oilseed production of Central region to the tune of 16.61 per cent during the pre reform period. It has increased by 12.87 per cent during the post reform period. In this way, despite having second largest share in oilseed production in the State, Central region registered an overall decline in production over the years 1975-76 and 2005-06. The share of Eastern region in States oilseed production ranged for about 9 per cent to more than 12 per cent during this period. Eastern region has also witnessed increase in oilseed output of 55 per cent to about 60 per cent during pre and post reform periods.

The analysis of oilseed production indicates that the scenario is not satisfactory as the region having the highest share of states oilseed output registered a decline in oilseed output during the post reform period.

The main commercial crop of the State, Sugarcane, is mostly grown in Western region of the state. Out of total sugarcane of the State only Western region accounted for more than 69 per cent in 1975-76, more than 70 per cent in the year 1990-91 and more than 65 per cent during the year 2005-06. The volume of sugarcane output in this region has increased by 75.64 per cent between the years 1975-76 and 1990-91. This has further increased by more than 15 per cent during the years 1990-91 and 2005-06. The overall increase in oilseed production during entire period has been more than 102 per cent in this region (Table 2.7).

Table-2.7 Region-wise Level of Agricultural Production in U.P (Sugarcane) (IN MT)

| Period | Bundelkhand | Central | Eastern | Western | U.P |
|---------------------|------------------|---------------------|---------------------|---------------------|-----------------------|
| 1975-76 | 126820 (0.22) | 6317981 (11.22) | 10858138 (19.28) | 38998491 (69.27) | 56301430 (100.00) |
| 1990-91 | 139171 (0.14) | 12383475 (0.13) | 16193249 (16.66) | 68493849 (70.46) | 97209744 (100.00) |
| 2005-06 | 255283 (0.21) | 21969191 (18.16) | 19910568 (16.46) | 78825601 (65.17) | 120960643 (100.00) |
| Percentage Increase | | | | | |
| 1975-76 to 1990-91 | 9.74 | 96.01 | 49.14 | 75.64 | 72.66 |
| 1990-91 to 2005-06 | 83.44 | 77.41 | 22.96 | 15.09 | 24.44 |
| 1975-76 to 2005-06 | 101.30 | 247.73 | 83.37 | 102.13 | 114.85 |

The highest growth in sugarcane output (247.73 per cent) over the years 1975-76 and 2005-06 was recorded in Central region of the State. The sugarcane output increased by

more than 96 per cent during the years 1975-76 and 1990-91 in this region. In later half (1990-91 to 2005-06) it increased by 77.41 per cent in Central region. The share of sugarcane output of this region in the State has been ranging from more than 11 per cent in 1975-76 to more than 10 per cent in the year 1990-91 and further to more than 18 per cent during the year 2005-06. Thus, there has been a consistent increase in Central regions share of sugarcane production in the State over the years.

The third largest share of sugarcane production of the state (16.46 per cent) was recorded in Eastern region. The sugarcane production in this region grew at a faster rate (19.28 per cent) during the pre reform period (1975-76 to 1990-91) then it increased (16.66 per cent) during post reform period in this region. Owing to adverse climatic conditions, Sugarcane cultivation did not click in Bundelkhand region and share of total production has been limited to only around 0.22 per cent. Despite all adverse conditions Sugarcane production here grew by more than 83 per cent in Bundelkhand region during the post reform period also but only by 10 per cent. The production growth of sugarcane has been more a function of other variable than climatic conditions in all the regions of the state except Bundelkhand.

2.3 Productivity of Major Crops in the States

A careful perusal of per hectare crop productivity of major crops in Uttar Pradesh over the years presents some interesting results. The tables 2.9 to 3.8, showing productivity of major crops in different periods from 1975-76 to 2005-06, indicate major improvements in productivity during Pre reform period i.e., during 1975-76 and 1990-91. Considering the yield of paddy in the state which was around 9 quintals per hectare during the year 1975-76, became double (about 18 quintals per hectare) in the year 1990-91. The yield of this crop during post reform period has increased but it has been marginal. It grew from about 19 quintals in 1990-91 to less than 20 quintals during the year 2005-06 (Table 2.8).

Table 2.8 - Region-wise Productivity of Rice in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 7.811915 | 5.493856 | 9.869977 | 9.799712 | 7.190001 | 9.79001 | 8.734499 |
| CENTRAL | 9.346989 | 11.76153 | 12.41958 | 18.17697 | 18.43047 | 17.30475 | 20.72287 |
| EASTERN | 8.238924 | 9.155797 | 14.20243 | 16.67604 | 16.93211 | 19.89294 | 19.02416 |
| WESTERN | 11.13495 | 14.07678 | 18.53291 | 22.31059 | 23.42267 | 13.15733 | 21.96462 |
| UTTAR PRADESH | 9.01177 | 10.54461 | 14.77123 | 17.96223 | 18.53511 | 16.8962 | 19.95505 |

In case of wheat crop, productivity level has gone up from 17.87 quintals in 1975-76 to 21.67 quintals per hectare during 1990-91. It has further gone up to 27.24 quintals per hectare during the year 2000-01. But the yield of wheat has gone down to 25.86 quintal per hectare during the year 2005-06. Thus, the yield of wheat has remained almost stagnant during the post reform period (Table 2.9)

Table 2.9 - Region-wise Productivity of Wheat in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 12.69528 | 11.4777 | 12.83979 | 15.82455 | 18.32736 | 19.47379 | 19.61402 |
| CENTRAL | 12.42517 | 18.08095 | 17.47724 | 19.76875 | 22.5579 | 24.93906 | 25.19812 |
| EASTERN | 12.51094 | 15.21951 | 17.73264 | 19.64007 | 22.58349 | 24.51122 | 22.54126 |
| WESTERN | 24.70842 | 19.42408 | 24.75595 | 25.72883 | 29.01418 | 32.33592 | 30.70653 |
| UTTAR PRADESH | 17.87283 | 16.99813 | 20.04797 | 21.67145 | 24.68865 | 27.24049 | 25.85924 |

The yield of cereal crops as a whole over the years have also found to be increasing faster during post reform period. The increment in their yield level during post reform period has been marginal in the state. For example, the yield of cereal crops was recorded to be 10.08 quintals per hectare in the year 1975-76; this successively rose to 1.90 quintals per hectare during the year 1990-91. This has further increased to only 2.23 quintals per hectare during the year 2005-06. In fact, the yield level of cereal crops has gone down over the year 2000-01 and 2005-06. Most of the yield improvement was observed during the pre reform period only (Table 2.10).

Table 2.10 - Region-wise Productivity of Cereals in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 8.220456 | 8.790478 | 10.51761 | 13.02443 | 14.64345 | 16.37413 | 16.93657 |
| CENTRAL | 10.38541 | 11.90284 | 14.17389 | 18.32849 | 19.77794 | 20.91243 | 22.38623 |
| EASTERN | 9.516553 | 11.29237 | 15.15957 | 17.3587 | 18.95693 | 21.2779 | 20.14609 |
| WESTERN | 13.26814 | 15.44261 | 19.8587 | 22.59832 | 24.7364 | 26.99662 | 25.88325 |
| UTTAR PRADESH | 10.84399 | 12.69705 | 16.36741 | 19.00835 | 20.84095 | 23.03349 | 22.38797 |

The productivity of pulse crops in the state has registered decline from 9.76 quintals per hectare in the year 1990-91 to 7.7 quintals during the year 1995-96. After this, through the yield of pulse in the State has increased but could not touch that level. In the year 2000-01 it has increased to 8 quintals per hectare and in 2005-06, 8.3 quintals per hectare. The yield of pulse crops in the State has already been 8.5 quintals

during the year 1975-76. Thus, there has been a consistent decline in the pulse crops during the post reform period in the State (Table 2.11).

Table 2.11 - Region-wise Productivity of Pulses in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 6.374298 | 7.475016 | 7.812231 | 11.88528 | 7.725539 | 6.310573 | 7.978826 |
| CENTRAL | 8.625672 | 10.38416 | 7.302476 | 6.870202 | 6.161516 | 7.464438 | 7.031668 |
| EASTERN | 8.876296 | 9.943898 | 9.593523 | 9.640314 | 7.953724 | 10.13088 | 9.319832 |
| WESTERN | 9.99666 | 8.832257 | 10.12789 | 8.951803 | 8.355622 | 8.755044 | 8.565986 |
| UTTAR PRADESH | 8.50512 | 9.03538 | 8.95268 | 9.76238 | 7.74123 | 8.02606 | 8.35255 |

The productivity of oilseeds has not increased much over a period of thirty years. The productivity has been hovering between 5.3 quintals and 5.8 quintals per hectares during the years 1975-76 to 1985-86. It has gone up to more than 8 quintals per hectare during the year 1990-91 which has further increased to 8.6 quintals per hectare in 1995-96. But after this, oilseed productivity has fallen marginally and ultimately increased to 9.3 quintals per hectare in the year 2005-06. Thus, the oilseed yield did not increase significantly over a period of last fifteen years. Whatever increase in yield level is realized, it was during the years 1985-86 and 1990-91 (Table 2.12).

Table 2.12 - Region-wise Productivity of Oilseeds in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 2.655424 | 2.480418 | 3.956606 | 4.72307 | 4.822055 | 5.521361 | 4.568495 |
| CENTRAL | 7.832475 | 4.909443 | 5.466933 | 6.601402 | 6.445864 | 6.096252 | 6.89729 |
| EASTERN | 4.479845 | 4.314897 | 4.512873 | 5.901713 | 7.096674 | 7.351655 | 8.934544 |
| WESTERN | 5.416281 | 6.45801 | 6.976991 | 10.25808 | 11.24528 | 11.19358 | 12.46835 |
| UTTAR PRADESH | 5.474899 | 5.317391 | 5.867851 | 8.201365 | 8.666697 | 8.2532 | 9.337697 |

The highest improvement in Sugarcane yield level was observed from 328 quintals to 682 quintals per hectare between the years, 1975-76 and 1980-81 in the State. This level of sugarcane yield could not be achieved till date. After 1980-81 the sugarcane yield came down to less than 500 quintals which has increased to around 550 quintals and 600 quintals per hectare during the year 1990-91 and 1995-96 respectively. But during the last ten years, the sugarcane yield remained limited around 547 quintals to 584 quintals per hectare (Table 2.13).

Table 2.13 - Region-wise Productivity of Sugarcane in UP (Quintal/per hectare)

| Region | Productivity 1975-76 | Productivity 1980-81 | Productivity 1985-86 | Productivity 1990-91 | Productivity 1995-96 | Productivity 2000-01 | Productivity 2005-06 |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BUNDELKHAND | 324.4308 | 406.2484 | 479.6188 | 78.21671 | 313.8132 | 427.3659 | 290.8545 |
| CENTRAL | 334.4212 | 400.1961 | 445.5747 | 430.346 | 534.3504 | 514.8201 | 546.3664 |
| EASTERN | 351.3726 | 1330.058 | 483.0579 | 497.3487 | 501.6819 | 474.442 | 516.9444 |
| WESTERN | 321.064 | 519.6101 | 509.3613 | 603.86 | 656.1163 | 578.7025 | 618.7132 |
| UTTAR PRADESH | 328.1242 | 682.6363 | 495.8387 | 551.7682 | 607.1626 | 547.2006 | 584.1867 |

The decline or stagnation in production or productivity of crops may be attributed to many factors and technology (seed) is one of them. There also may be short supply of food crops because of cost and price related reasons. The decline in productivity of wheat in Punjab and Haryana in recent years cannot be attributed to technology fatigue. In fact the intensive cultivation of mono-crop (Paddy-wheat sequence) along with a heavy dose of chemical fertilizers may have affected the soil fertility, which may be causing deceleration in productivity of crops. The same reasons for low or stagnant productivity are applicable in Uttar Pradesh as well.

A perusal of region-wise productivity data in the State showed a relatively constantly high productivity of wheat crop level in Western region throughout the reference periods. The productivity level in this region has increased marginally from 24.70 quintals/hectare to 25.75 quintals/hectare during the years 1975-76 and 1990-91. But the increment in wheat productivity has been higher during the second half i.e., between the years 1990-91 and 2005-06. This has increased 30.70 quintals/hectare in the year 2005-06 from 25.72 quintals/hectare during the year 1990-91 in Western region. In fact, the productivity has gone up more than 32 quintals/hectare during this period in the year 2000-2001. But it has declined to 30.70 quintals/hectare during the terminal year of the reference period i.e. 2005-06. The wheat productivity is found to be second highest in Central region but remained below the state average throughout the period. The yield level of wheat in Central region has even gone marginally lower than Eastern region during the years 1975-76, 1985-86 and 1995-96. The wheat productivity in Bundelkhand region has been recorded to be the lowest during all the reference years except in the beginning i.e. the year 1975-76.

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In terms of cereal crops also, the highest yield level was found in Western region of the State. The cereal yield of this region has always remained above the State average. Rest of the three regions depicted cereal productivity below the State average. In Western region most of the improvements in cereal yield levels were obtained during the pre-reform period. The improvements in cereal productivity during the post-reform period were marginal. In terms of cereal yield, the second highest level was attained by Central region, followed by Eastern and Bundelkhand regions.

As seen earlier, the pulse yield in the State has not been satisfactory over the years. Within regions it has been highest in Western and Eastern regions. Initially (in 1975-76) the pulse yield was higher (about 10 quintals/hectare in Western region, which was surpassed by Eastern regions during the years 1980-81, 1990-91, 2000-01 and 2005-06. The highest pulse yield of 11.88 quintals/hectare was attained in Bundelkhand during the year 1990-91. In rest of the periods the yield of pulse crops has been highest once in Central region also. It was the year 1980-81 when pulse yield of the region recorded to be 10.38 quintals/hectare the highest. A perusal of productivity data of pulse crop over the period and regions indicated that all the regions have suffered stagnation in terms of pulse productivity.

We have been importing large quantities of pulses from various countries over many years because there is an absolute technology failure in pulse crops. The production of pulses has been stagnating over the last 30 years not because of reduction in area under pulses but mainly because of low and stagnant productivity. Despite the fact that we know that there is an increasing demand for pulses, we have not tackled this issue so far. In fact this is a policy fatigue.

Region-wise analysis of oilseed productivity in the State showed stagnation in productivity in Bundelkhand and Central regions over a period of 1990-91 and 2005-06. Prior to this period, during 1975-76 and 1990-91 it has declined in Central region and increased marginally in Bundelkhand. In rest of two regions oilseed productivity, as presented in Table 2.12, has increased during this period. It has relatively high one up from 5.41 quintals/hectare in 1975-76 to 10.25 quintals/hectare in the year 1990-91 in Western region as compared to post reform period when oilseed yield has increased to 12.46 quintals/hectare in 2005-06. In Eastern region productivity was observed to be increasing marginally during both the periods. However, the productivity level only in

western region stood above the state average during all the reference years of the study. State as a whole did not have any improvements in oilseed productivity well. In fact, since the introduction of the green revolution, there has been a thrust in terms of research and other policy inputs to increase the production of certain crops (Paddy, wheat, jowar and bajra) so as to protect the food security of the country. These efforts have significantly increased the production of cereals and India has become self-sufficient in cereal production. Under this process other crops like oilseed and pulses suffered. We have been importing large quantities of these crops from various countries over many years.

The region-wise productivity analysis of sugarcane crops indicated the highest productivity growth of sugarcane crop in Western region followed by Central and Eastern regions respectively during the year 2005-06 as presented in Table 2.13. During the pre reform period, the sugarcane productivity level of Eastern region stood even higher than the same in Western region till date. Yield of sugarcane remain lack luster throughout the period due to unfavourable economic conditions. Farmers are receiving over Rs 6000 crore from sugar mills as payment for sugarcane purchased by the sugar mills in the State. This sector is contributing about 18 per cent to the State domestic product from agriculture sector. There is a scope to further increase the share of sugarcane to State domestic product from agriculture sector. In view of this, a proper attention through appropriate policy measures is needed for ensuring suitable sugarcane price policy in order to mention the supply of sugarcane in the State.

CHAPTER III

PROFITABILITY OF AGRICULTURE IN UTTAR PRADESH

In recent years, cultivators are becoming more and more concerned about the cost and returns from agriculture in general and enterprises on one form in particular. Cultivator relates the prices, which are received for the produce in the market with his cost of production. Government takes into account the cost of production in deciding the price policy and for declaring the minimum support prices for selected important crops. Agricultural Cost and Prices Commission recommends the minimum support prices to Government.

In view of the rapid spread of technology in agriculture, farmers are required to face severe competition, particularly when the farm produce is to be exported. One of the ways to survive in the competition as also to gain better profit is to have a lower cost of production. For this farm costing or working out cost of production of crops is necessary. The farm costing is also useful to the farmers to keep watch on the expenditure which is increasing in the modern farming. After identifying the expensive item, one can think of reducing the cost of such items. One can work out the cost per unit of a particular product. For this, one has to maintain regular farm records and accounts. At the end of seasonal year, it can be analyzed. Farmer can compare the profitability of different crops on the farm. This may be used for deciding the farming plan for the next year.

The present section of the study takes up the profitability of agriculture in all the districts of the State. The profitability of agriculture, as stated above, has been assessed here, in terms of difference between the gross value of agricultural output and the cost of cultivation. These profitability estimates are worked out for three crops i.e. wheat, paddy and sugarcane. The profitability estimates for these crops are carried out in all the districts of state for the year 2005-06.

3.1 Methodology

The profitability of wheat, paddy and sugarcane is estimated by subtracting cost of cultivation from gross value of output of each crop. Hence, profitability is termed as net value of income from each crop. Per hectare value of all these estimates are worked out. Along with this, output input ratio is also drawn for each crop.

- (i) **Cost of Cultivation:** The cost of cultivation is calculated by multiplying the Quantity of agriculture output by per Quintal cost of cultivation of a particular year. The cost of cultivation is calculated for state as a whole is estimated by "Commission for Agricultural Cost and Price (CACP). The cost component of a crop covers

- (a) All actual expenses in cash and incurred in production by owner,
- (b) rent paid for leased in land,
- (c) Imputed value of family labour,
- (d) Interest on value of owned land.

These cost estimates are made by taking into account statutory minimum or actual wage whichever is higher.

- (ii) **Gross value of output:** The gross value of output is calculated by multiplying the quantity of a crop out by its implicit per quintal price of the same year. The Gross value of crop output also includes the value of by-product of the same crop. The Per hectare value of by-product of a crop is calculated by multiplying the area under specific crop with per hectare value of the same crop. The year-wise per quintal implicit price and per hectare value of by product is calculated by CACP. This data is published through Directorate of Economics and Statistics Ministry of Agriculture. The value of crop and the value of by-product are added to arrive at gross value of crop output.

The cost estimates of all the three crops in this study are inclusive of imputed value of the family labour and also take into account statutory minimum or actual wage whichever is higher. Some other studies, computing the cost of cultivation have chosen to take cost of cultivation on the lower side. Hence, have not included some items while computing the cost of cultivation. These items are rent for leased in land, value of family labour and statutory minimum wages etc. Owing to this difference, the cost of cultivation computed in this study may reduce the per hectare net income from the crop concerned. The cost of cultivation, in the present study is calculated on the basis of CACP method under the category of C2*.

3.2 Profitability under Different Crops in the State

The profitability estimates showing the State average for these crops namely wheat, paddy and sugarcane for the year 2005-06 indicate highest per hectare income in sugar cane followed by wheat and paddy. Table 2.1 showed Rs 32805 per hectare income for

sugarcane followed by Rs 6390 per hectare and Rs 1559 per hectare in wheat and paddy crops respectively. The output input ratio turns out to be highest 1.75 in sugarcane, 1.34 in wheat crop and the lowest 1.12 in paddy crop of the State. Thus, the cost of cultivation as percentage to the gross value of output turns out to be highest (89.58 per cent) in paddy crop followed by wheat (74.75 per cent) and sugar cane (57.01 per cent).

Table -3.1 Crop-wise Cost of Cultivation and Net income in the State (2005-06)

| Crops | Gross Per Hectare value of output (Rs) | Per Hectare Cost of Cultivation(Rs) | Net Income Per Hectare (Rs) | Output input ratio | Percentage of input cost to gross value of product |
|-----------|--|-------------------------------------|-----------------------------|--------------------|--|
| Wheat | 25315.80 | 18925.86 | 6389.94 | 1.34 | 74.75 |
| Paddy | 14960.46 | 13401.95 | 1558.51 | 1.12 | 89.58 |
| Sugarcane | 76311.22 | 43506.33 | 32804.89 | 1.75 | 57.01 |

The analysis of Table 1 data relating to profitability under different crops presented in Table 3.1 indicated a low ratio of value of output to cost of cultivation for all the three crops in the State of Uttar Pradesh. Another estimate of Narayana Moorthy showed even lower output cost ratios for these crops in the States of Andhra Pradesh, Punjab and Maharashtra. The ratio of output value to the cost of cultivation (C2) was only 0.94 for paddy crop in Andhra Pradesh, 1.23 for wheat crop in Punjab and 0.93 for sugarcane in Maharashtra during the year 2001-02. In recent years (during 2005-06) it is likely to be even lower than this. In fact the cost of cultivation of crops has been increasing over the years because of increases in wage rate of labour, input prices and other managerial costs. It is needless to mention that when the cost of cultivation increases more than the rate at which the value of output increases, farmers may not be inclined to adopt the assortment of recommended inputs for crop productivity.

As per conservative observation in case of most of the crops, the cost of cultivation as percentage to the value of crop output should be around 40 per cent. The result shown in Table 3.1 showed this percentage for higher ranging from 89.58 per cent to 57.01 for wheat, paddy and sugarcane. This is because of the factors, listed above, which have been included in the calculation of cost of cultivation.

3.3 Region-wise Profitability under Different Crop

- (i) Wheat: As compared to the State average of gross value of per hectare wheat Output (Rs 25315.8), Western region has the highest per hectare wheat output

followed by the Central, Eastern and Bundelkhand respectively during the year 2005-06 as presented in Table 3.2.

Table -3.2 Region-wise Cost of Cultivation and Net income for Wheat crop (2005-06)

| Region | Gross Per Hectare value of output (Rs) | Per Hectare Cost of Cultivation (Rs) | Net Income Per Hectare (Rs) | Output input ratio | Percentage of input cost to gross value of product |
|-------------|--|--------------------------------------|-----------------------------|--------------------|--|
| Western | 26857.37 | 20335.71 | 6521.67 | 1.32 | 75.71 |
| Central | 22178.99 | 16057.10 | 6121.89 | 1.38 | 72.39 |
| Eastern | 21050.55 | 15025.09 | 6020.46 | 1.40 | 71.37 |
| Bundelkhand | 18824.85 | 12989.58 | 5835.27 | 1.45 | 69.00 |
| U.P | 25315.8 | 18925.86 | 6389.94 | 1.34 | 74.75 |

Value of per hectare wheat output is found to be more than State average only in case of Western region (Rs 26857.37). In rest of the three regions it rolled below the State average. At the same time, the cost of cultivation also found highest, more than State average, in Western region. In rest of the regions it is found below the State average. Net per hectare income from wheat crop turns out to be Rs 6390 in the State. However, it stands highest, Rs 6522 per hectare in Western region and lowest Rs 5835 per hectare in Bundelkhand region.

Output input ratio presented the highest profitability ratio (1.45) in Bundelkhand and the lowest (1.32) in Western region. Eastern region has better ratio than central region in this respect. All this shows that the cost of cultivation increases more than proportionate to the value of crop for obtaining the high yield level. Hence, profitability of crop cultivation is affected. It is further strengthened by the figures indicating percentage of cost value to the gross value of wheat output in the State. It is found to be about 76 per cent, the highest, in western region and the lowest (69 per cent) in Bundelkhand region.

- (ii) Paddy: Region-wise per hectare values of paddy crop is presented in Table 3.2 show highest per hectare value of paddy Rs 15440 in Western region of the State. But the profit ratio (output input ratio) is found to be lowest, 1.11 in this region. Almost 90 per cent of total gross value of paddy output consists of input cost. Per hectare value of crop output (Rs 7086) is found lowest in Bundelkhand region. But a lesser share of output value (78 per cent) is spent cost of cultivation. As a result of this per hectare net income of paddy crop turns out to be highest (Rs 1565.40) in

Bundelkhand. As against this, per hectare Net paid income in rest of the regions has been marginally lower than this, despite higher value of paddy output.

Table -3.3 Region-wise Cost of Cultivation and Net income for Paddy crop (2005-06)

| Region | Gross Per Hectare value of output (Rs) | Per Hectare Cost of Cultivation (Rs) | Net Income Per Hectare (Rs) | Output input ratio | Percentage of input cost to gross value of product |
|-------------|--|--------------------------------------|-----------------------------|--------------------|--|
| Western | 15440.44 | 13882.34 | 1558.09 | 1.11 | 89.90 |
| Central | 14083.21 | 12523.93 | 1559.28 | 1.12 | 88.92 |
| Eastern | 13727.82 | 12168.23 | 1559.59 | 1.13 | 88.63 |
| Bundelkhand | 7085.88 | 5520.48 | 1565.40 | 1.28 | 77.90 |
| U.P | 14960.46 | 13401.95 | 1558.09 | 1.12 | 89.58 |

The analysis of results further supports the argument that in a region like Bundelkhand having low paddy yield owing to low per hectare cost of cultivation fetches higher profit margin. In rest of regions particularly in Western region, the value of export put is observed much higher on account of high cost of cultivation. Per hectare higher cost of cultivation reduces in profit margin in these regions. The data presented in Table 3.3 shows that per hectare cost of cultivation in Western region (Rs 13882) is more than 2.5 times higher than the same in Bundelkhand region (Rs 5520).

- (iii) Sugarcane: Output input ratio under sugarcane crop cultivation is found to be better as compared to other two crops in the state. Being commercial crop its per hectare value of output is far higher than wheat and paddy. Per hectare cost of cultivation is also higher. But the cost of cultivation as percentage of total output is lower in sugarcane cultivation as compared to wheat and paddy crops.

Table -3.4 Region-wise Cost of Cultivation and Net income for Sugarcane (2005-06)

| Region | Gross Per Hectare value of output (Rs) | Per Hectare Cost of Cultivation(Rs) | Net Income Per Hectare (Rs) | Output input ratio | Percentage of input cost to gross value of product |
|-------------|--|-------------------------------------|-----------------------------|--------------------|--|
| Western | 77002.57 | 43921.64 | 33080.93 | 1.75 | 57.03 |
| Central | 67697.08 | 38331.64 | 29365.44 | 1.77 | 56.62 |
| Eastern | 65731.18 | 37150.68 | 28580.49 | 1.77 | 56.51 |
| Bundelkhand | 38258.66 | 20647.38 | 17611.28 | 1.85 | 53.96 |
| U.P | 76311.22 | 43921.64 | 33080.93 | 1.75 | 57.55 |

The highest percentage cost to per hectare value of sugarcane is recorded in Western region (57.03 per cent). The same is seen to the lower successively in Central, Eastern and Bundelkhand regions respectively. The highest per hectare income is recorded to be Rs 33081, Rs 29365, Rs 28580 and Rs 17611 in Western, Central, Eastern and Bundelkhand regions respectively.

A perusal of data relating to the sugarcane cultivation shows higher output ratio under sugarcane cultivation as compared to the state like Maharashtra. As compared to output input ratio of 1.75 in Uttar Pradesh, it is recorded to be 0.927 in Maharashtra during the year 2001-02. Though the ratio for U.P presented here is for the year 2001-02, still these figures for Maharashtra are lower for this year also. A comparison of region-wise net per hectare income from sugarcane within the State further shows that there is not much difference among Western, Central and Eastern regions as against Bundelkhand, where the per hectare net income level is almost half of these regions.

All this shows a lower level of input investment in Bundelkhand for sugarcane cultivation due to adverse climatic conditions. Any increased investment for input cost of sugarcane cultivation may reduce the profit margin drastically in sugarcane crop.

3.4 District-wise Profitability under Different Crop

A district-wise figure of cultivation profitability under sugarcane, paddy and wheat for the year 2005-06 are presented in Annexure 1, 2, and 3. The annexures present the district-wise data relating to per hectare gross value of income, per hectare cost of cultivation, per hectare net income and output input ratio for each crop.

1. Wheat

The districts of highest per hectare net income and lowest output input ratio from wheat cultivation of Uttar Pradesh are categorized in first group of Annexure 2.

The net per hectare income of these districts ranges from Rs 6793 to Rs 6510. The district on the top in this respect is Shahjahanpur and the last district of this category is Aligarh, both belonging to Western region. The ratio of crop output and input is quite low (1.29 to 1.32) as compared to the same in case of sugarcane. This means a higher percentage share of total gross value of wheat output is spent as cost of cultivation as compared to the same for sugarcane. The gross value crop output per hectare turns out to be highest, Rs 30038 in Shahjahanpur followed by Ghaziabad and Meerut. Per hectare value of wheat output at the State level has been Rs 25316 during this period (2005-06).

All the districts of Western Uttar Pradesh had high per hectare value of wheat production, except Bareilly where value turned out to be Rs 23010.

Most of district except Bareilly are grouped in the first two categories (having highest crop value and income of the districts. However, one district from Bundelkhand, one from Eastern region and four from Central region also belong to first two categories. In remaining two categories, when per hectare value, cost and income from wheat cultivation is low, only one district of Western region is grouped.

Net per hectare income from wheat crop worked out to be Rs 6390 as state average. Most of the districts belonging to the Western region have income above this level except six districts. These district have below state average per hectare wheat income. These are – Moradabad, Etah, Bijnore, Badaun, Saharanpur and Bareilly. Two districts from Central region (Kanpur and Barabanki) and one from Bundelkhand (Jalaun) have also found to have income higher than State average. The third group of districts show per hectare income below first two groups and their per hectare crop income ranges from the highest of Rs 6219 in Sultanpur to Rs 5956 in Jhansi.

The fourth group has the lowest per hectare value, cost of cultivation and net income from wheat cultivation. The lowest income of Rs 5518 in this crop is seen in Banda district. Most of the districts of this group belong to Eastern and Bundelkhand region. The districts of Fatehpur and Rae Bareilly belonging to Central region also fall in this category. Low level of agricultural input application and low output in these districts is reflected through the high output ratio which ranges from 1.42 to 1.58. The average value of output input ratio for wheat cultivation in the State is 1.34 during the year 2005-06.

The difference in the cost of cultivation per hectare of wheat crop between the district of highest income and the lowest is quite higher. The cost of cultivation in Shahjahanpur is about 2.5 times higher than per hectare cost of cultivation in Banda, where cost of cultivation and income is lowest in the State. The variation in the cost of wheat cultivation within the Western region between the highest and lowest is 1.38 times. It is found to be 1.43 times in Central region, 1.94 times in Eastern region and 2.13 times in Bundelkhand.

2. Rice

The comparison between wheat and rice cultivation in terms of their per hectare value, income and cost of cultivation shows much lower status of paddy crop than wheat. Per hectare value for Paddy has been calculated as Rs 14960 as against Rs 25316 of wheat at the State level. Net per hectare income of paddy stood at Rs 1559 as compared to Rs 6390 of wheat. Output input ratio also has been 1.12 for paddy against 1.34 for wheat at the State level. All

this shows a very low profitability of paddy crop in the State. In fact use of organic manure etc is applied only for paddy crop which enhances its input cost. Later on, for wheat in rainy season same manure is used a fresh dose is usually not administered. This highest per hectare output value of paddy is recorded in Agra followed by other districts of Western region, falling in the first group of district as presented in Annexure 3. One district from Eastern region (Faizabad) and one from Central region (Barabanki) also belong to this group. The highest per hectare value of paddy turned out to be Rs 20610 in Agra followed by the districts of Bijnore, Etawah and Pilibhit. Per hectare value of paddy stood at Rs 14960 at the State level. Out of 48 districts (many have been merged with each other for temporal comparability), 21 (about 44 per cent) show their per hectare paddy value more than State average. Rest of the 56 per cent districts has below state average per hectare production value. The districts belonging to Bundelkhand region show the lowest per hectare paddy production in the State. The districts like Badaun of Western region, districts of Unnao, Sitapur and Fatehpur of Central region and Azamgarh, Basti, Ballia and Mirzapur of Eastern region also fall in the lowest (fourth) group of districts having lowest per hectare production.

As far as per hectare net income from paddy is concerned, high per hectare value of paddy is obtained in the districts having lower per hectare value of output. As against per hectare value, about 44 per cent district show per hectare income lower than State average engaged in paddy cultivation. Rest of the 56 per cent show their per hectare income more than the State average. The highest per hectare income is obtained in the districts falling in the lowest category (fourth group) in terms of value of paddy produce.

The analysis of data relating to value, cost and income from paddy crop shows that cost of cultivation in paddy cultivation has affected adversely the farmers incurring higher input cost. Their per hectare profit margin has been reducing with the increased cost despite increased per hectare production. The output input ratio has been 1.08 in the district of highest per hectare output and it was 1.40 in the district having lowest output value. The difference in per hectare value of paddy output has been more than 1.3 times between the districts of lowest and highest production. At the same time the difference in cost of cultivation has been more than 1.42 times between the two.

3. Sugarcane

District-wise data for sugarcane, presented in Annexure 1, shows per hectare gross value of output, cost of cultivation, net income and output input ratio. All the districts of State are categorized into four groups according to the level of their crop value, cost of cultivation, income and output input ratio. The first categories of districts are having highest per hectare gross income and net income. In the second, third and fourth

categories districts have successively lower gross value , cost of cultivation and net income from the sugarcane crop.

In the first group of districts, highest level of cost of cultivation and net income, belong to the Western region of the state. Three other districts in this category belong to Eastern region. The district of Muzaffarnagar has highest per hectare gross value, cost of cultivation and the net income from sugarcane cultivation. It is followed by the districts of Meerut, Badaun, Saharanpur, Moradabad and Bijnore. Gorakhpur, Sultanpur and Basti also belong to this group because of having highest per hectare gross value and net income from sugarcane cultivation. The district of Pilibhit and Rampur also fall in this group.

Above listed twelve districts having highest level of crop value and income, have the lowest output input ratio in sugarcane cultivation of the State. This indicates that these districts have the highest share of cost of cultivation in total value of sugarcane produce.

The districts falling in the second highest category in terms of per hectare sugarcane production and income mostly belong to Western region. Three districts from Central region and two from Eastern region also fall in this category. The gross value per hectare of sugarcane production in this group ranges from Rs 71352 to Rs 63581. Net income per hectare ranges from Rs 30825 in Bulandshahar to Rs 27722 in district Mainpuri. The districts of Kheri, Unnao and Sitapur also belong to this group. Two districts namely, Gonda and Deoria are in the same group. The output input ratio of sugarcane production in this group of districts ranges from 1.76 in Bulandshahar to 1.17 in Mainpuri.

The third group consists of four districts in Western region and four each from Central and Eastern regions. The two districts in this group in terms of highest per hectare income from sugarcane cultivation are Agra and Etah. Per hectare net income from sugarcane cultivation ranges from Rs 27721 to Rs 25394 in the districts of Agra and Mathura respectively.

The fourth group, consisting of 12 districts having lowest per capita gross value, cost of cultivation and net income from sugarcane cultivation includes all the districts of Bundelkhand region. There are two more districts from Central region and five from Eastern region. The net income per hectare of sugarcane cultivation in this group of districts ranges from Rs 24067 to Rs 14509 in Varanasi and Jalaun respectively. The highest output input ratio of sugarcane cultivation is seen which ranges from 1.79 to 1.91. The output input ratio of sugarcane cultivation turns out to be 1.75 at the state level during the year 2005-06.

CHAPTER IV

MAJOR CONSTRAINS IN UP AGRICULTURE

The economy of Uttar Pradesh is to a large extent dependent on agriculture. Hence, the agriculture sector is critical in determining the level of growth in the State. Primary sector contributes about 37 per cent of the State income in the year 2003-04 and generated employment for 66 per cent of total workers in the State. The share of agriculture sector in State income has been reducing on account of slow performance of agriculture. Along with this actual investment in agriculture sector is only 1.3 per cent of the total Gross Domestic Product at the national level. Almost same investment level in agriculture exists at the state level also. The percentage expenditure in agriculture sector has declined during the different plan periods from a high of 29 per cent in Second Five Year Plan and the Annual Plans to a low of 5.47 per cent during Sixth Five Year Plan and about 8.6 per cent during the Tenth Plan period. Apart from this the Gross Capital formation in agriculture in UP was just 13.71 per cent of Gross Capital formation in the State during the year 2000-01. The private investment of the State in agriculture sector is found to be lower than the national average. There are many constraints against a sustainable and high growth of agriculture in Uttar Pradesh.

4.1 Agriculture Production

The growth of agriculture production of the state has been declining during the post reform period as compared to the pre reform period. Even in Post reform period the total production of paddy in 2004-05 was less than what had been achieved in the year 1995-96. There has not been much increase in total Kharif and Rabi foodgrains production in the years even within the post reform period (Table 4.1).

Table – 4.1: Agricultural Production over the last ten years

| S.No | Crop | 95-96 | 96-97 | 97-98 | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | 03-04 | 04-05 |
|------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. | Paddy | 9788 | 11197 | 11678 | 10826 | 12633 | 11679 | 12856 | 9596 | 13022 | 9559 |
| 2. | Total Kharif Foodgrains | 12967 | 14374 | 15082 | 13212 | 15681 | 14998 | 15877 | 12003 | 15996 | 12498 |
| 3. | Wheat | 21077 | 23287 | 22147 | 22781 | 25551 | 25168 | 25498 | 23748 | 25567 | 22514 |
| 4. | Total Rabi Foodgrains | 23705 | 26321 | 24939 | 25612 | 28580 | 27777 | 28310 | 26370 | 28442 | 25305 |
| 5. | Total Foodgrains | 36672 | 40695 | 40021 | 38824 | 44261 | 42775 | 44187 | 38373 | 44438 | 37803 |
| 6. | Oilseeds | 1389 | 1520 | 984 | 1070 | 1268 | 1145 | 1110 | 851 | 928 | 946 |
| 7. | Pulses | 2163 | 2591 | 2282 | 2308 | 2551 | 2160 | 2377 | 2182 | 2380 | 2366 |

It has been recognized that enhancing agricultural growth is essential for achieving the macro objective of inclusive growth set for the Eleventh Five Year Plan. While pointing out various weaknesses of this sector, most experts tend to emphasize that "technology fatigue" is one of the prime resources for slow growth in agriculture experienced since mid 1990's. There has been lack of any breakthrough in agriculture production technology in recent years.

4.2 Farmers Debt

The data released by NSSO also provides useful insights regarding indebtedness of farmers in the country as a whole as well as Uttar Pradesh. In UP out of 17.16 million farmer households, 6.92 million (40.3%) were reported to be indebted while for the country as a whole, 48.6% (43.42 million) of 89.35 million farmer households were reported to be indebted. Estimated prevalence of indebtedness among farmer households was highest in Andhra Pradesh (82%) followed by Tamil Nadu (74.5%) and Punjab (65.4%). In U.P, households with one hectare or less land accounted for 74% of all farmer households and about 39% of them were indebted.

At all India level, more than 50% of indebted farmer households had taken loan for the purpose of capital or current expenditure in farm business. Such loans accounted for 584 rupees out of every 1000 rupees of outstanding loan. In Uttar Pradesh indebted farmer households which had taken loan for the purpose of capital or current expenditure in farm business accounted for 609 rupees out of every 1000 rupees of outstanding loan. Marriage and ceremonies accounted for 118 rupees per 1000 rupees of outstanding loans of farmer households in Uttar Pradesh.

Banks (51%) followed by moneylenders (19%) were the most important source of loan in terms of percentage of outstanding loan amounts in Uttar Pradesh while for the country as a whole, the corresponding figures were 36% and 26% respectively. Average outstanding loan per farmer household was highest in the State of Punjab (Rs 118495) followed by Kerala (Rs 100832), Haryana (Rs 23555), Andhra Pradesh (Rs 12760) and Tamil Nadu (Rs 11023). Average outstanding loan per farmer household in Uttar Pradesh was Rs 6706.

4.3 Low Yields, Wide Yield Gaps and Fast Decelerating Total Factor Productivity Growth Rate

Agricultural output, in value terms, during the last two decades has grown only by about 2.3% per annum. The situation would have been far more unsatisfactory but for the good performance of horticulture, livestock and fisheries sub-sectors whose shares in

agricultural output have steadily been increasing. Food grains (cereals, pulses, oilseeds) production and yield had registered negligible growth during the past six years. Despite over 70% of cultivated area of the State being irrigated, agricultural productivity of the State is much below the competing States of Punjab and Haryana in rice and wheat. Although producing 45 per cent of the country's sugarcane, its productivity and sugar recovery is lower than Maharashtra, the major competing State.

The productivity fatigue is reflected in the continued low yields and huge yield gaps, ranging from 50 to 200 per cent in several crops, particularly in pulses and oil seeds. The aggravating input risk : output imbalance has further dampened the agricultural terms of trade. For instance, while the NPK use per ha increased from 118 kg in 2000-01 to 153 kg in 2006-07, average yields of major commodities remained unchanged or even declined. This has adversely affected nutrient and water use efficiencies, competitiveness, farmers' income, ecological security and total factor productivity.

4.4 Technology Fatigue, Lowest Investment In Agriculture Research and Collapsing Extension

Research and technology developments have been the worst victim. In percentage terms, UP has the lowest proportion of its Agricultural GDP assigned to Agricultural Research, averaging about 0.08% against the national average of 0.3% and the world's average of 0.6% and developed countries' average 2.04%. flow of path-breaking new varieties and other technologies from the SAUs and other agricultural research institutions has almost dried up, as reflected in the declining and even negative growth rates in the Total Factor Productivity. The extension system has almost collapsed. The scientist farmer linkage has seriously weakened.

4.5 Price Policy and Cost Of Cultivation

Apart from evidence to prove existing technology fatigue checking the agricultural growth, there is ample evidence to show that policy fatigue is also a major reason of agrarian crisis and deceleration in agricultural growth. A major policy that conforms the fatigue is the faulty agricultural price policy adopted for different crops. It is a simple economic logic that no body would invest money in venture that does not provide reasonable remuneration. This is exactly happening to agriculture during more than the last

ten years. Farmers were unable to recover even the cost of cultivation because of faulty pricing policy.

The cost of cultivation of crops has been increasing over the years because of increases in wage rate of labour, input prices and other managerial costs. The plight of farmer further aggravates as the cost of cultivation increases more than the rate at which the value of output increases. Under this process farmers may not be inclined to adopt the assortment of recommended inputs for crop cultivation. Reduced use of various yield-increasing inputs would lead to a decline in crop productivity.

4.6 Declining Soil Health and Widespread Land Degradation

Nearly 14 % of the arable land of the State is degraded and/ or wasted and soil health and fertility, particularly micronutrient status, are deteriorating fast. Water pollution and biotic stresses are expanding and further hurting the soil resources. Soil testing laboratories are poorly distributed and almost non-functional. The State Land Use Board is poorly equipped and non-effective and nutrient applications are hardly based on soil and plant sample analyses. Despite availability of new space technologies (satellites) and other technologies, the resources of the State have not been mapped reliably.

4.7 Depleting Water Resources

The rich water resources of the State are depleting fast. The water table in the Indo-Gangetic Plain is receding annually by 20 to 30 cm. facing successive droughts during the past four years, the water table in Bundelkhand Region has receded by 2 to 3 meters where all the 47 blocks are in critical condition. In all, over 140 blocks in the State have turned grey. Due to poor drainage development, 800,000 ha are waterlogged. Irrigation and water use efficiency in the State is hardly 30 per cent – one of the lowest in the country. Although some highly successful experiences of watershed-based water, soil and agricultural development experiences are available in the State, these have remained only flashes in the pan. The water recharge and water harvesting schemes have hardly been implemented. Due to extremely low and uncertain availability of energy, farmers are forced to use diesel for operating their tubewells, and due to diesel price escalation the production cost has soared high with no commensurate rises in produce prices, thus further reducing farmers' income.

4.8 Erosion of Rich Biodiversity

UP is blessed with diverse agro-ecological, socio-economic and agricultural production systems where a large number of local land races and farmers' varieties have evolved, viz the aromatic rices, mango varieties and veritable medicinal and aromatic plants. The State also has the largest livestock population which are the main source of livelihood security of the large number of marginal and landless households, and the State is home to a large number of most important breeds of cattle, buffalo, goat and sheep. The State is rich also in fisheries resources with large biodiversity spread over in the huge veritable water bodies. The vast treasure of genetic resources of crops, livestock, fish and other aquatic fauna is, however, eroding fast under various pressures. In the absence of scientific breeding policy and lack of knowledge, cross-bred cattle are haphazardly displacing local breeds such as Tharparkar, Gangatiri etc. which possess high productivity and adaptability.

4.9 Poor Input, Institutional and Service Supports

Timely and adequate availability of quality inputs, supports and services is a far cry. The State has the highest distribution of spurious seeds, pesticides and other agro chemicals. The lack of quality and affordable energy is one of the most major constraints. Cooperatives and grass root community-based institutions have generally collapsed.

4.10 Decline in Flow of Quality Seed

Quality seed of improved varieties has been pivotal to the Green Revolution and holds the key for the Second or Evergreen Revolution and sustained enhanced agricultural production. Yet, this pivotal sector, particularly after the Tarai Seed Corporation becoming part of Uttarakhand, has performed poorly in the State. Breeder and nucleus seed productions have not only been insufficient in quantity but also in quality, affecting the quality down the line.

Despite agro-ecological congeniality of the State for production of most seeds, private seed companies have generally been non-enthusiastic in setting their seed production and processing centers in UP. For instance, Eastern UP consumes nearly 40 per cent of the country's hybrid rice seed, but the bulk of the seed is produced in and procured from other States. Likewise, despite producing 42 per cent of the country's potato, the State heavily depends on Central Government and other States for its potato seed. The

vitroplant-microtuber-seed potato tuber chain has remained rudimentary, and often the so called certified seeds are diseased and viral-infected.

There is poor linkage between public and private sectors in production and distribution of quality seed. The private sector fixes seed prices in a monopolistic manner, especially of hybrid seeds, and the prices thus fixed are often beyond reach of the majority marginal and sub-marginal farmers. Further, in the absence of buffer seed stocking and seed banks of approved varieties, in the event of droughts and floods, which occur frequently, the quality seed availability is extremely low.

4.11 Inadequate and Untimely Supply of Needed Fertilizers

As mentioned earlier, unbalanced use of plant nutrients, often caused due to unbalanced national policy and price decisions, and untimely and inadequate availability of fertilizers, particularly phosphatic and potassic fertilizers, is one of the main reasons for the deceleration of TFP growth rate and deteriorating soil health. While the demand for balanced fertilizer basket has been growing, the supply has lagged behind and supply side management, especially of DAP and MOP, has also been unsatisfactory. There are no rake points in 19 districts.

4.12 Huge Post-Harvest Losses, Negligible Value Addition and Poor Farmer-Market Linkage

Post harvest losses are rampant, averaging 10 to 30 per cent for different commodities. Hardly 1.5% of the agriculture produce in the State is processed and there is negligible value addition. Backward-forward linkages with the private sector and farmer-market linkages are rudimentary at the best. Market infrastructures, support and information are extremely poor. Pricing and timely payment to farmers are in shambles, particularly for the perishables and non-traditional products. The market reforms stipulated under the new APMC Act have only partly been accepted. Support to entrepreneurs and agribusiness development is highly inadequate. The lack well-functioning markets is the main bottleneck toward commercialization and diversification of farming and efficiently and competitively bringing agricultural products to domestic and foreign consumers.

4.13 Miniaturization of Farm Holdings, Loss of Agricultural Land and Lack of Necessary Land Reforms

The declining level holding size in the State is one of the major constraints to take up viable agricultural practices. As per figures of 2000-01 less than one hectare holdings

account for 76.88 per cent of the total holdings. At the same time small holdings constituted 14.25 per cent of the total state holdings. There has been an increase in the number of marginal and small land holdings in the State over the years 1985-86, 1995-96 and 2001-01. The number in remaining three groups of land holdings have either gone down or remained stagnant (Table 4.2).

Table – 4.2: Size of Holdings in Uttar Pradesh

| S.No | Size of Holdings (in hectares) | 1985-86 | 1995-96 | 2000-01 |
|------|-----------------------------------|-----------------------|-----------------------|-----------------------|
| 1. | Less than 1 hectare (marginal) | 13782 (72.6%) | 16237 (75.4%) | 16659 (76.88%) |
| 2. | 1.0 to 2.0 hectare (Small) | 2964 (15.6%) | 3135 (14.6%) | 2087 (14.25%) |
| 3. | 2.0 to 4.0 hectare | 1582 (8.3%) | 1586 (7.4%) | 1312 (6.06%) |
| 4. | 4.0 to 10.0 hectare | 602 (3.2%) | 532 (2.5%) | 528 (2.44%) |
| 5. | 10.0 hectare and more | 55(0.3%) | 39 (0.1%) | 82 (0.37%) |
| | Total | 18985 (100.0%) | 21529 (100.0%) | 27668 (100.0%) |

One of the main handicaps of UP agriculture is the miniaturization of its holdings, average farm size being 0.83 ha against the national average of 1.32 ha. Seventy seven percent of the holdings were marginal – less than one ha and accounted for 37% of the total cultivated area, while only 9% of the holdings were larger than 2 ha but accounted for 39% of the State's agricultural area. The marginal and sub-marginal size farms are increasingly becoming economically non-viable and non-competitive. Consequently the livelihood security of families dependent on such farms has deteriorated fast.

The necessary land reforms and institutional strengthening and restructuring to address the issues of entitlement and allocation of culturable wasted lands to landless agricultural workers and leasing in and leasing out have been ignored. On the other hand, about 30,000 to 40,000 ha of good agricultural land is being annually diverted to non-agricultural uses while 5.6 million ha degraded land remains unused and large budgets are being spent to reclaim these lands without much visible impact. All out effort is called for improving productivity of the marginal and sub-marginal holdings, including through harnessing the power of scale by adopting group farming, contract farming, small holder estate farming and other participatory approaches. But, the governments have failed to firm up these approaches.

4.14 Declining Investment in Agriculture

Investment in agriculture has steadily been declining, climbing down from 25% of the total expenditure in the 2nd Plan to 8.6% in the 10th Plan and the agricultural Gross

Capital Formation (GCF) is now hardly 13.7% of the State's GCF. Further, poor infrastructure, particularly highly inadequate and unreliable energy supply and rural road and other connectivities, weak institutional support and poor implementation and monitoring capacities and restrictive regulatory frameworks and significant constraints.

4.15 Growing Intra-State Inequity: Endangering Peace

Besides the inter-state inequity, inequalities among the different regions of the State are glaringly high. The rural distress in the Eastern Region is encouraging spread of naxalism in Poorvanchal. The Eastern Region, Bundelkhand Region and Hill Region (before creation of Uttarakhand) were declared backward economic regions for planning purposes from the Third Five Plan. During the past 50 years or so, while the situation has improved for the Hill and Bundelkhand Regions, in that order, it has worsened for the Eastern Region, which accounts for over 40 per cent of the State's population. Net Per Capita Domestic Product of Western Region was about 60 per cent higher than that of Eastern districts.

4.16 Poor Governance and Co-ordination

There has often been serious mismatch among policy, strategy, priority, programmes, investments and institutions, causing regional imbalances and non-inclusive growth and development. The poor development of infrastructure, low investment in industries and other sources of growth and limited institutional support to Eastern and Bundelkhand sub-regions are reflected in the high concentration of poverty and under nutrition and overall deprivation in these sub-regions. The gaps in governance and coordination are also reflected in the inefficient and /or under-utilization of GoI funds and schemes. For instance, large sums provided to the State under the National Horticulture Mission remained unused despite horticulture being a high potential area in the State.

CHAPTER V

POLICY FRAMEWORK FOR SUSTAINABLE AGRICULTURE IN UP

Uttar Pradesh has not been able to harness its potential for development. Poor policies, strategies, priorities, inadequate and lopsided investment, poor absorption capacity, extremely poor governance, utter neglect of Eastern UP and Bundelkhand regions and wavering political leadership are responsible for the high concentration of poverty, hunger, deprivation, inequity and illiteracy in the State. Being endowed with one of the largest fertile crescents and agro-biological richness and having over 70 per cent of its huge population dependent on agriculture, it is recommended that the investment and capital formation in and overall support to agriculture, which has so far been extremely inadequate and misplaced, must be corrected urgently. The GoUP proposals are fully justified and should be fully met with. However, detailed action plans should be developed with clearly defined outlay and outcome and monitoring indicators. A matrix approach identifying linkages and timeframe (short, medium and long term) should be adopted.

5.1 Investment in Agriculture

For agriculture-led as well as for other convergent routes of development, at the first tier of priorities for UP lies infrastructural upliftment, covering both social (health, education) and physical (roads, power, communication) infrastructure. The cumulative ill affect of acute shortage of power for the past decades in the State has been the main handicap for development. Removal of this deep seated malady should be the highest priority as the future road map of agriculture-led development of the State will depend on sustained and adequate availability of power/energy and rural connectivity. It has been shown empirically that assured power availability and the promotion of rural roads have the most beneficial impact on rural development. Investment in these sectors shall reduce rural poverty not only through productivity growth but also through increased non-agricultural employment opportunities and higher wages and thus provide highest return in terms of both acceleration of growth and reduction in poverty from incremental government spending in these sectors.

Agriculture and rural areas should, therefore, claim bulk of the resources in proportion of their importance in the economy, the agricultural population size and intensity and the expected socio-economic gains. So far as additional resources during the next few years are concerned, other investments should be undertaken only when simultaneously the basic infirmities are addressed and the past neglect of UP is corrected.

The mindset for financial allocation must, therefore, change. Even though there is scant evidence on impact of most of the investments during the past plans, the proposals continue to cover the same portfolios and fail to internalize new issues and opportunities. The Plan and Additional Funds get amalgamated with Non-Plan commitments (largely salaries) to support the on-going routine and generally non-productive programmes and recalcitrant human resources. This calls for effective monitoring, impact assessment, overall evaluation, need and goal based mid-course corrections and well-defined accountability.

To cater to the above needs in a dedicated, continuing and dynamic mode, it is strongly recommended to set up a State (UP) Commission on Farmers. The membership of the Commission should include all the principal stakeholders in the farming enterprise, especially farmers of different categories. The Commission should submit an Annual Report on State of Farmer, Food and agriculture to be placed before the State Legislature for discussion and decision.

5.2 Towards an Inclusive Growth

Alleviation of the overall socio-economic backwardness of UP and bridging of the wide gaps in realization of agro-ecological productivity potential must be pursued vigorously for achieving faster and inclusive growth not only of the State but of the country as a whole. It is not only that the per capita income of UP was about 50 per cent of that of the country as a whole, but it is worrisome that the divide has been widening. For instance, while the national per capita income during the VIII, IX and X Five Year Plans increased annually by 4.9, 3.6 and 6.0 per cent, respectively, the corresponding figures for UP were 1.4, -0.4 and 3.3 per cent. This was essentially due to the low per capita State Plan Expenditure, being about 61 per cent of that at the national level. The handicaps in investment and expenditure, which has depressed performance of agriculture – the pith of the State's livelihood security and the engine of agrarian prosperity, should be reversed soonest. The additional funds requested for the purpose should be provided on priority basis and utilized judiciously. The proposed UP Commission on Farmers should oversee convergence of funds from various sources and their effective and timely utilization.

5.3 Intensify and Diversify Agricultural Production

Three reiterative approaches should be adopted for bridging the productivity, profitability, income and sustainability gaps : (i) develop more profitable, market-oriented and sustainable agricultural production systems, (ii) make extension and adaptive research more relevant and accessible to farmers and (iii) reduce risks associated with the changes and provide safety nets to marginal and landless farmers.

Towards sustainable intensification the following four sets of interdependent actions are needed:

- (i) Enhancing the resource endowment and their access to people – land, soil, water and bio- diversity (plants, livestock, fish, forest and microbes) – their health, conservation, sustainability, climate change and risk management, productivity, and competitiveness.
- (ii) Technology-led growth promoting synergy among extension, inputs, services, knowledge society, human resources, information and communication and social capital.
- (iii) Institutional supports, credit, insurance, investment, policy environment, infrastructure, public – private partnership and governance.
- (iv) Assured, remunerative and easily accessible markets, value addition, farmers' income and consumers' satisfaction.

In each of the agro-ecological zones of the State, Special Agricultural Zones (SAZs) could be established viz pulses in Bundelkhand, disease-free livestock production in Bundelkhand, goat cheese in mid-west districts, vegetables, aonla and guava in Eastern UP, potato in Farookhabad (central UP), mangoes in Central UP and Varanasi region etc.

There is urgent need for stepping up breeding crop varieties, particularly fruits and vegetables, for processing quality. Also, research on feeding crops for yield in an environmentally safe manner needs strengthening.

As regards diversification, organic farming is certainly an option, but it requires greater scientific inputs than chemical farming. Hence, this area of research needs high-level multidisciplinary attention. Farmers feel the need for technological guidance, but research work based on careful field experiments is currently inadequate. Crop-livestock-cum-fish integrated production systems offer scope for the adoption of the principles and methods of organic farming, but must be backed up with easily accessible, cost-effective and credible certification system.

In intensively cultivated mono-crop areas, crop diversification may be beneficial from the points of view of ecology, economics and employment generation. However, any advice on crop diversification must be accompanied by steps to ensure effective market support for the alternative crops. In planning for crop diversification, particularly from food to non-food crops, such as for the production of bio-fuels, the food security of the State and the nation should be kept in view. On the other hand, the wasted lands could be reclaimed and utilized for energy plantations.

5.4 Conservation, Enhancement and Sustainable Harnessing of Natural Resources

Land, Soil Fertility and Nutrient Management

Undertake land reform with particular reference to land leasing and distribution of ceiling surplus land and wasteland preferentially to landless agricultural workers, Women Self Help Groups keen to do farming and other such organized rural community groups, and link them with other such producer and marketing groups.

Prime farm land must be conserved for agriculture and should not be diverted for non-agricultural purposes and for programmes like the Special Economic Zone. Such special programmes should be assigned wastelands and/or land affected by salinity and other abiotic stresses which reduce the biological potential of land for the purpose of farming. Agriculture and industry both should prosper in a mutually reinforcing manner. A Land Zonation Team should be constituted consisting of soil scientists, agronomists and remote sensing specialists to earmark soils with low biological potential for farming such as wastelands, lands affected by salinity, acidity, etc., for industrial activities and construction.

Establish soil test laboratories at each block level, issue soil health card to each farm family, apply balanced nutrients and adopt conservation tillage and recommended location-specific technologies. Synergise technologies and policies on fertilizer use for promoting balanced fertilization for increasing efficiency and TFP growth rate.

Water

Evolve just and equitable mechanisms to give access to water and to include local people in management of water resources. Women must have a significant role in both access and management as water users and managers.

There is considerable scope for improving the efficiency of water use. It has been calculated that even a 10% increase in the present level of water use efficiency in irrigated

projects may help to provide crop life saving irrigation in large areas. Higher efficiency can be achieved by generating synergy among water, variety, nutrients (macro and micro) and farm implements. The concept of maximizing yield and income per unit of water should become internalized in all crop production programmes. Drought, Flood and Good Weather Codes should be formed and judiciously followed for managing the nature-imposed conditions.

Undertake the following steps for water supply augmentation and demand management:

- (i) Rainwater harvesting and aquifer recharge should be mandatory and farmers must be provided with financial assistance to invest in the replenishment of their renewable resource. This is the imperative need for conservation farming.
- (ii) All existing wells and ponds should be renovated.
- (iii) Demand management through improved irrigation practices, including sprinkler and drip irrigation, should receive priority attention.
- (iv) A Water Literacy movement should be launched and regulations should be developed for the sustainable use of ground water.
- (v) In Bundelkhand and other water scarce areas, the land use system should place emphasis on the cultivation of high value but low water-requiring crops, such as pulses, oilseeds and arid and semi-arid fruit species.
- (vi) A *Pani Panchayat* in every village can help in getting the available water distributed on an equitable basis. Water Users' Associations should be encouraged to gain expertise in Maximizing the benefits of the available water.

Livestock

Establish a State Livestock Feed and Fodder Corporation for ensuring availability of quality fodder and feed. Such a Corporation should be a facilitating body for providing seed and planting material of improved fodder varieties to Self-help Groups (SHGs) for local level production. Wasted lands could be used for fodder production to make up the deficit. Increased production of maize, pulses and oilseeds should particularly be integrated with livestock farming. Fodder and Feed Banks, operated by Gram Sabhas, should be created at strategic locations.

Both conventional and non-conventional fodder and feed management approaches are needed. Many of the cellulosic wastes can be converted into good animal feed through appropriate treatment and enrichment. Planting of nutrition rich fodder plants should

receive high priority. Established technologies such as baling and ensiling need to be disseminated widely.

Agri-clinics operated by trained veterinary and farm science graduates and trained Para Veterinarians will be very helpful to enhance the income of livestock owners through higher productivity. At the same time, crop-livestock mixed farming systems should be promoted since this will not only help improve income and household nutritional security, but also facilitate organic farming. Livestock insurance also needs revamping and should be made accessible to small livestock owners.

Establish genetic evaluation systems for indigenous breeds as well as crosses so that selection can lead to genetic improvement of production characteristics. Upgrading of breeds through artificial insemination, use of embryo transfer technique to increase the number of pedigreed bulls cross breeding suited to the farmers' resources and reproductive health management should be strongly supported. Improved processing and marketing must be converged synergistically both for dairy and meat products and strengthen linkage among government, industry, producer and consumers. The livestock sector has to become sanitary and phytosanitary compliant for which the State should develop one BSL-4 and two BSL-3 laboratories.

A State Livestock Development Council may be established to give integrated attention to all aspects of this important sector, such as breeding policy, feed and fodder, healthcare, marketing, value addition and biomass utilization (skin, bones and blood).

In view of the serious damage done by bird flu epidemics in recent years, quarantine and testing facilities should be established at selected centres to safeguard the health and survival of the poultry industry and for the protection of lives and livelihoods of people.

Bio-resources

Farmers and other people of U.P. should benefit from the Plant Variety Protection and Farmers' Rights Act (PVPFR) which recognizes the multiple roles of farmers as cultivators, conservers and breeders. Farmers as breeders have the same rights as professional breeders and they can enter their varieties for registration and protection. Farmers as conservers are entitled to recognition and reward from both the National Gene Fund and the National Bio-Diversity Fund.

Given high local bio-diversity richness, participatory breeding procedures involving scientists and local conservers would be particularly helpful in improving the productivity of land races. Genetic engineers working in public good institutions should perform the role of pre-breeding, i.e., development of novel genetic combinations for important economic traits, such as resistance to biotic and abiotic stresses. They should then work with farmers in participatory breeding programmes, so that genetic efficiency and genetic diversity can be integrated in an effective manner. Such a programme was undertaken a few years ago by the SAU, Kumarganj, but could not be institutionalized and has tapered off. These initiatives should be revived, and strengthened and expanded.

A genetic and legal literacy movement should be launched. Farm families should be trained in methods of preventing gene erosion and establishing Herbal Bio-valleys, especially in Vindhya. Farmer level Gene/Seed banks need to be set up in areas where traditional varieties are in danger of extinction. "Seed Exchange Programme" under which farmers are given hybrid rice in exchange for their traditional rice varieties should be stopped, as this will erode the traditional rice gene pool.

As regards livestock, community-based conservation and development of indigenous livestock breeds and species should be encouraged. State Farms could be used to promote *in situ* conservation of animal breeds, and for evaluation and building data bases. Grazing lands must be earmarked to enable the conservation of animal genetic resources. Documentation of special traits should be done in the context of the new biology and new nutritional needs or for other economic traits like hide/leather quality.

The gene pools are public goods and should receive focused financial, technological and institutional supports from the Government of U.P. and several other national and international programmes channeled through the designated body at the State level.

5.5 Ensure Timely Flow of Quality Inputs

Seeds

The challenges and opportunities unique to U.P. and new and nationally and internationally emerging technological and socio-economic developments have not been internalized in policy options, strategies, programmes, activities and resources allocation in U.P. The seed sector must be streamlined as the highest agricultural priority of the State. Good quality seeds and disease free planting material, including in-vitro cultured

propagules, must be made available to the farmers for desired crop productivity and security. Hybrids are now becoming available in many crops. Hybrid seeds can be produced by women SHGs on contract with seed companies with proper technical guidance and training in seed technology. Agricultural Universities should organize courses on Seed Technology and Business to fill the gap of trained human resources along the seed chain. This will strengthen the private sector to lead the flow of quality seed to the farmer.

Uttar Pradesh uses 40 per cent of the hybrid rice seed of the country, mostly by small holders in Eastern U.P., giving an yield advantage of about 15 to 20 per cent. Yet, there is no hybrid rice seed development and production system in the State. This new opportunity could render U.P. not only as the leading rice producer (currently at 3rd rank) but also as the sizeable contributor to the targeted additional 10 million tonnes of rice during the next 2 to 3 years under the National Food Security Mission. U.P. Council of Agricultural Research (UPCAR) should prepare a detailed State Programme on Hybrid Rice (as also on hybrid maize and potato), clearly allocating responsibilities and financial and other resources to the three SAUs, the private sector and the State Agriculture Development and Extension Departments. As in China, India should establish a National Hybrid Rice Institute (NHRI), and locate it in Eastern U.P. In order to systematically and speedily expand hybrid rice area, appropriate institutional supports directed to the cause, such as, credit, insurance, need-based subsidy and risk coverage should be provided. NABARD may adopt hybrid rice as a major portfolio for rural development.

Single cross hybrids have huge prospects of doubling maize yield, productivity, production and farmers' income in the State in the next 3 to 5 years. But this technology has barely been promoted. A highly focused single cross maize hybrid programme should be established urgently through PPP. Likewise, given the centrality of U.P. in the national potato economy, a highly self-reliant in-vitro-micro-tuber-seed tuber chain should be created in the potato belt of the State. These developments will be helpful also in generating additional rural employment.

Fertilizer

We must firm up our fertilizer policy which must be conducive to balanced use of fertilizers, use of specialty, value added and customized fertilizers. Often the emphasis is misplaced on organic agriculture and wrong messages criss-cross at various levels. Balanced and adequate fertilization (inorganic), coupled with organic sources, is a must for

meeting our food and agricultural demands. A fertilizer subsidy and domestic fertilizer production policy should urgently be streamlined.

In order to enhance food availability and self-sufficiency, the recently created National Food Security Mission stipulates additional production of 10 million tonnes of rice, 8 million tonnes of wheat and 2 million tonnes of pulses during the next 2-3 years. Recognizing that U.P. accounts for about 20 per cent of the nation's total foodgrain production (wheat 35%, rice 12% and pulses 17%) and there is considerable realizable yield gap in these crops in the State, the main production inputs, namely, fertilizer, seed and water should strategically be provided on priority basis to realize the potential and production targets both for the State and the country. But, this is not happening. For instance, during the current rabi season the fertilizer allocation to the State is far below the desired level and that too had not reached the State/the distribution channel/farmer in time, resulting in delayed sowing and deficient presowing fertilization. The non-monetary inputs of governance/management, precision and timeliness are as important, if not more, as the monetary inputs viz. fertilizers, and can no longer be ignored as we must improve the input use efficiency, competitiveness and profitability.

Pesticides

The development, introduction and diffusion of environmentally safe and effective pesticides should be given priority. There is need for incorporating the use of chemical pesticides in an Integrated Pest Management (IPM) system. Farmers need training in crop care and IPM. Suitable quality control, safety evaluation and other regulatory systems should be strengthened. The sale of spurious and sub-standard pesticides is rampant in U.P. and should firmly be prevented. Botanical pesticides should be promoted. In each block, breeders, farmers, pesticide manufactures and extension personnel could form a Crop Care Consortium.

Implements

Small farmers need implements for timely sowing, management of weeds and improved post-harvest technology. This need is particularly great in multiple cropping systems. Women especially need women-friendly implements/tools which can reduce drudgery, save time and enhance output and can be handled comfortably. Farm graduates can provide tractors and other larger farm implements on a custom-hire basis by organizing Agri-business Centres.

5.6 Agricultural/Animal Sciences Universities: Expanding the Knowledge Base

The Government of U.P. plans to locate one Farm University in each of the nine agro-ecological zones and wishes to have in all three animal sciences/veterinary universities. The proposed creation of a strong technical base by establishing six new agricultural universities and two animal husbandry and veterinary universities in addition to the three existing agricultural and one veterinary university is indeed a laudable move. But, considering the plight of the existing universities the demand is somewhat unrealistic. The existing four agricultural/ veterinary universities (Meerut, Mathura, Kanpur, Kumarganj-Faizabad) are in a deplorable financial and development state. Scientists/teachers/employees at times remain unpaid for several months and resort to strike, as witnessed recently. The quality of research, technology, human resource has been below average. Therefore, the foremost demand should be to revive the existing universities and empower them financially and qualitatively. A one-time catch-up grant of about Rs.150 crore to each of the four universities should be provided against an effectively prepared work plan and verifiable indicators. In the meantime, selected colleges in each uncovered agro-ecological zone should be strengthened with well-defined targets. Such institutions, if necessary, could be gradually upgraded to universities with new faculties and newer disciplines. Further, several institutes of ICAR, CSIR and other organizations addressing problems of agriculture are located in U.P., and should be made use of.

Clearly, changes are required in the processes and mechanisms directed towards creating a performance-oriented ethos. Lack of performance of extension services over the last two decades has led to complete disillusionment and reluctance to put any resources. The basic problem has been the rigidity in orientation and approach to transfer of technology, which still suffers from hangover of HYVP days. Adaptive research and extension have generally failed to internalize the end-to-end approach and extension activities have been confined to the farmers and that too covered only production aspects. Marketing, processing, value addition, prevention of post-harvest losses, quality considerations, etc. have seldom been addressed, thus leaving out participation of the entire private sector. Extension services in the State need a new agenda, a new face, and a new organization. Although the private sector must play an increasingly greater role in the year ahead, the regulatory information system and public good services must be

adequately attended to by the Government, for which adequate support will be needed. Retraining and retooling of the human resources will be needed.

The motto of these universities should be 'every scholar an entrepreneur.' This will call for integrating business management principles with major applied courses. Also, the Farm Universities should engender their curricula in a manner that the relative roles of women and men in farming are recognized and they are equally empowered technologically.

A network of Regional Institutes on Food Safety and Security needs to be set up to promote safe handling of food and a quality literacy movement in villages. This will also help to strengthen our capacity to deal with sanitary and phytosanitary measures and Codex Alimentarius standards of food safety.

In order to improve employability of the graduates, greater emphasis should be placed on skill development. In this context, Industrial Training Institutes (ITIs), KVKs and other such institutions should be strengthened and updated to impart practical training. Communication and computer skills of the graduates should be improved for undertaking extension jobs and online accessing needed information.

5.7 Knowledge Connectivity and Backward-Forward Linkages

Comprehensive support is needed for bridging the growing gap between scientific know-how and field level do-how. This knowledge deficit should be overcome speedily in order to enhance the productivity and profitability particularly of small farms.

Post-harvest technology wings must be added to Krishi Vigyan Kendras urgently and lab to land demonstrations in the area of post-harvest technology, agro-processing and value addition to primary products must be taken up to provide skilled jobs in villages to landless labour families.

In addition to the retraining and retooling of existing extension personnel, there is a need to promote farmer-to-farmer learning. For this purpose, Farm Schools may be established in the fields of outstanding farmers. Farmer-to-farmer learning can speed up the process of technological upgrading of crop and animal husbandry, fisheries and agro-forestry. Farm Schools can also be set up in the fields of eminent horticulturists including those who are raising organic vegetables and fruits and tissue culture propagated planting material.

The help of the modern ICT should be harnessed by establishing a *Gyan Chaupal* in every village or village cluster and to assist in forging backward-forward links. The Common Service Centre Programme of the Department of Information and Technology, Government of India should be harnessed to promote social inclusion in this important technology.

5.8 Assured and Remunerative Marketing Opportunities and Farmer-Market Linkages

The recent initiatives of farmers' companies and farmers mall in Maharashtra should be adopted in U.P. Farmers' Associations, Small Farmers Estates and SHGs should be helped to market and export on competitive terms by spreading awareness of the opportunities available for domestic and external agricultural trade. Selected Agri-export zones around specialty products of U.P. should be established and strengthened and should become places where farmers will get the best possible price for their produce. Agri-Marts or Agri-Parks and Agri-Clinics should be supported as pro-farmer marketing systems.

The State should fully implement the APMC Reforms and Revised Act to promote farmer-market linkage.

- ♦ The Minimum Support Price (MSP) mechanism should be suitably modified, developed, protected and implemented effectively across the State. MSP of crops and other products needs to keep pace with the rising input costs.
- ♦ The Market Intervention Scheme (MIS) should respond speedily to exigencies especially in the case of sensitive crops in the rainfed areas, especially pulses and oilseeds.
- ♦ Community Foodgrain Banks should be established which would help in the marketing of underutilized crops and thereby generate an economic stake in the conservation of agro-biodiversity.
- ♦ U.P. farmers can produce a wide range of health foods, herbal medicines and organic products and market them under strict quality control and certification procedures.
- ♦ The Public Distribution System (PDS) should be universal and should undertake the task of enlarging the food security basket by storing and selling nutritious millets and other under utilized crops, particularly in Bundelkhand Region.

5.9 Strengthening and Re-orienting Extension Support

The dwindling extension system should be revived s extension for market support. However, in order to promote market-oriented extension, remunerative market should be assured before stimulating surplus production. The market-led extension must lead farmers in Farmer Interest and/or Self-Help Groups as commercialized units, enable them to prepare their own market-led strategy and action plan, and disseminate market intelligence, key information about the market that enable farmers to consider alternative enterprises options.

Introduce the Agri-mart concept – a hub of knowledge and forward-backward linkages organised on the principles of a service industry linking the line Departments, private sector and NGOs.

The Government of U.P. should strengthen start-up training to graduates in Agriculture, or any subject allied to Agriculture like Horticulture, Sericulture, Veterinary Sciences, Forestry, Dairy, Poultry, Fisheries, etc. to render the Agri-clinic and Agri-business Centres truly professional and reliable 'the third market front.' Such trained and experienced agriculture graduates would fill the gaps in extension services.

Establish well managed supply chains for the specialty commodities and benchmark each component of the chain for competitiveness. Modern technologies and management tools and key success measures should be introduced at critical points to enhance the competitiveness and to move the farmer upward in the value chain to maximize his/her income.

The serious gaps in quality and bio-safety standards should be bridged by increasing quality and bio-safety consciousness and awareness at all levels and by modernizing the testing facilities at strategic points and creating trained staff and training the farmers and other stakeholders.

5.10 Rural Employment Security

There is need for a Rural Non-Farm Livelihood Initiative for rural areas. The initiative could have as its core a more market and professionalised KVIC and small farmers organizations and bring all rural non-farm employment programmes together in order to generate convergence and synergy among them. A consortium approach involving the different agencies concerned is needed.

5.11 Reviving and Strengthening Institutions

Cooperatives

The policy and legal framework under which cooperatives are functioning need to be reviewed so as to create an enabling environment for them to attain autonomy and run their operations in business-like fashion without rigid controls and regulations imposed by the State laws. They have to become voluntary, member-driven, autonomous and largely self-regulating organizations working on the principles of self-help. The management of the cooperatives needs to be professionalised with clear demarcation of functions of the elected members and the professional managers. The audit and accounting systems have to be improved and made transparent so as to give greater confidence to all those who are associated with them.

Contract/Group Farming: Harnessing Power of Scale

Given the preponderance of small and marginal farm holdings, increase in small farm productivity and creating multiple livelihood opportunities through crop-livestock integrated farming and agro-processing system have become urgent tasks for increasing farmers' income. Methods of providing the power of scale to small farmers will have to be developed and popularized on a win-win basis for all concerned to enhance yield and income. The following are some of the methods which small and marginal farmers could consider for gaining in efficiency and economy: (i) Cooperative Farming and Service Cooperatives, (ii) Group Farming by Self-Help Groups, (iii) Small Holders' Estates, (iv) Contract Farming, (v) Farmers' Companies, and (vi) State Farms.

State Land Use Board

The State Land Use Board should be linked to State and Block Level Land Use Advisory Services on a hub and spokes model to link land use decisions with ecological, meteorological and marketing factors on a location and season specific basis. They should provide proactive advice to farmers on land use. Land use decisions are also water use decisions and hence it is important that the proactive advice is based on both an estimate of likely water availability and the opportunities available for enhancing income per unit of water.

Rural Financing

The deposit: credit ratio being one of the worst in U.P., the State has a responsibility towards improving the credit absorptive capacity of the farmers and to support the banking

system by creating favourable environment for expanding and deepening of rural financial services by the banks. The credit cooperatives have an important position in the rural financial system and priority should be given to the implementation of the recommendations of the Vaidyanathan Committee.

There is a need for both credit and insurance literacy in villages. Gyan Chaupals can help in this task. The scope of Agricultural Insurance Policies should become wider and should also cover health insurance, as envisaged under the Parivar Bima Policy. Seed Companies should provide insurance in the case of GM crops.

Panchayat Raj Institutions

Panchayats' responsibility for agriculture including agricultural extension should be supported by empowering them with the needed information, training and tools for discharging this responsibility. Gram Sabhas should suitably be involved in this task, particularly for solving location-specific problems.

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Annexure – 1: Productivity for the year 1975-76

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|-------------|--------------|--------------|-------------|-------------|---------------|
| BANDA | BUNDELKHAND | 10.41 | 12.00 | 10.84 | 8.83 | 5.35 | 376.64 |
| HAMIRPUR | BUNDELKHAND | 9.82 | 15.88 | 13.30 | 85.23 | 4.22 | 41.27 |
| JALAUN | BUNDELKHAND | 9.82 | 20.25 | 16.70 | 10.43 | 6.26 | 286.61 |
| JHANSI | BUNDELKHAND | 9.82 | 18.13 | 15.21 | 8.15 | 5.14 | 383.68 |
| LALITPUR | BUNDELKHAND | 5.23 | 17.22 | 12.79 | 7.59 | 3.23 | 353.89 |
| | BUNDELKHAND Total | 7.81 | 12.70 | 8.22 | 6.37 | 2.66 | 324.43 |
| BARABANKI | CENTRAL | 17.77 | 20.56 | 18.41 | 8.01 | 5.38 | 451.32 |
| HARDOI | CENTRAL | 17.94 | 19.67 | 19.58 | 7.41 | 7.14 | 460.84 |
| KHERI | CENTRAL | 22.13 | 23.35 | 21.71 | 7.01 | 7.24 | 420.52 |
| LUCKNOW | CENTRAL | 16.90 | 20.71 | 18.18 | 6.57 | 5.26 | 451.32 |
| RAEBARELI | CENTRAL | 17.69 | 16.50 | 16.48 | 6.20 | 5.07 | 497.80 |
| SITAPUR | CENTRAL | 16.83 | 19.87 | 17.05 | 6.34 | 6.22 | 436.36 |
| UNNAO | CENTRAL | 15.37 | 18.15 | 16.15 | 6.18 | 6.20 | 330.66 |
| | CENTRAL Total | 9.35 | 12.43 | 10.39 | 8.63 | 7.83 | 334.42 |
| ALLAHABAD | EASTERN | 17.23 | 17.78 | 16.56 | 12.26 | 3.85 | 272.20 |
| AZAMGARH | EASTERN | 17.82 | 21.19 | 19.13 | 10.04 | 8.60 | 407.26 |
| BAHRAICH | EASTERN | 14.13 | 19.65 | 15.26 | 8.44 | 5.25 | 478.64 |
| BALLIA | EASTERN | 11.37 | 18.53 | 14.58 | 10.00 | 3.20 | 496.16 |
| BASTI | EASTERN | 15.47 | 17.98 | 16.26 | 8.86 | 6.81 | 536.79 |
| DEORIA | EASTERN | 18.73 | 20.31 | 19.11 | 7.08 | 7.51 | 560.40 |
| FAIZABAD | EASTERN | 21.13 | 21.42 | 20.86 | 8.40 | 5.32 | 508.00 |
| FATEHPUR | EASTERN | 19.59 | 21.26 | 18.46 | 12.44 | 7.87 | 651.86 |
| GHAZIPUR | EASTERN | 18.31 | 22.61 | 19.82 | 12.31 | 3.33 | 343.16 |
| GONDA | EASTERN | 13.94 | 19.09 | 14.95 | 7.49 | 4.88 | 477.08 |
| JAUNPUR | EASTERN | 17.71 | 21.15 | 17.83 | 11.71 | 2.50 | 405.40 |
| KANPUR | EASTERN | 20.68 | 26.45 | 21.81 | 15.61 | 10.57 | 606.97 |
| MAHARAJGANJ | EASTERN | 14.14 | 18.09 | 17.69 | 6.58 | 8.60 | 549.39 |
| MIRZAPUR | EASTERN | 13.52 | 12.01 | 10.95 | 8.13 | 2.95 | 595.22 |
| PRATAPGARH | EASTERN | 17.88 | 18.19 | 17.13 | 7.64 | 5.18 | 283.70 |
| SULTANPUR | EASTERN | 17.01 | 18.36 | 17.27 | 4.20 | 0.57 | 431.88 |
| VARANASI | EASTERN | 21.28 | 20.21 | 19.90 | 10.13 | 2.52 | 450.92 |
| | EASTERN Total | 8.24 | 12.51 | 9.52 | 8.88 | 4.48 | 351.37 |

Annexure 1 (contd...)

| | | | | | | | |
|---------------|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| AGRA | WESTERN | 15.99 | 27.27 | 20.14 | 11.15 | 12.00 | 399.37 |
| ALIGARH | WESTERN | 15.06 | 27.15 | 22.30 | 8.75 | 10.81 | 586.64 |
| B.SHAHAR | WESTERN | 16.40 | 29.30 | 26.08 | 9.65 | 9.90 | 572.68 |
| BAREILLY | WESTERN | 21.91 | 16.20 | 21.10 | 7.62 | 6.41 | 557.96 |
| BIJNOR | WESTERN | 27.31 | 23.19 | 24.49 | 5.47 | 6.93 | 604.44 |
| BUDAUN | WESTERN | 16.06 | 23.93 | 18.84 | 6.44 | 6.64 | 555.80 |
| ETAH | WESTERN | 15.54 | 25.91 | 20.15 | 12.27 | 9.72 | 607.16 |
| ETAWAH | WESTERN | 20.09 | 25.58 | 21.04 | 12.45 | 12.32 | 328.45 |
| FARRUKHABAD | WESTERN | 18.62 | 27.31 | 22.24 | 6.47 | 11.29 | 540.32 |
| GHAZIABAD | WESTERN | 20.72 | 29.98 | 25.43 | 12.41 | 9.56 | 608.20 |
| MAINPURI | WESTERN | 18.66 | 25.99 | 21.50 | 11.43 | 8.35 | 252.95 |
| MATHURA | WESTERN | 17.77 | 26.33 | 22.94 | 6.69 | 11.55 | 514.80 |
| MEERUT | WESTERN | 21.34 | 33.66 | 30.28 | 9.49 | 9.59 | 621.28 |
| MORADABAD | WESTERN | 23.55 | 23.84 | 21.32 | 6.50 | 7.34 | 563.08 |
| MUZAFFARNAGAR | WESTERN | 23.83 | 29.21 | 27.52 | 6.37 | 9.59 | 653.04 |
| PILIBHIT | WESTERN | 26.80 | 23.71 | 25.15 | 4.59 | 7.01 | 559.76 |
| RAMPUR | WESTERN | 22.06 | 24.24 | 22.31 | 6.82 | 7.26 | 628.28 |
| SAHARANPUR | WESTERN | 23.93 | 23.05 | 22.41 | 5.42 | 11.85 | 663.00 |
| SHAJHANPUR | WESTERN | 23.54 | 24.67 | 23.12 | 7.00 | 4.93 | 520.08 |
| | WESTERN Total | 11.13 | 24.71 | 13.27 | 10.00 | 5.42 | 321.06 |
| | UP | 9.011771 | 17.87283 | 10.84399 | 8.505116 | 5.474899 | 328.1242 |

Annexure – 2: Productivity for the year 1980-81

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|--------------|-------------|----------------|
| BANDA | BUNDELKHAND | 5.98 | 10.78 | 8.07 | 8.53 | 2.71 | 374.31 |
| HAMIRPUR | BUNDELKHAND | 3.84 | 12.77 | 9.73 | 7.22 | 2.15 | 422.53 |
| JALAUN | BUNDELKHAND | 4.11 | 14.16 | 11.49 | 7.96 | 3.07 | 412.19 |
| JHANSI | BUNDELKHAND | 4.20 | 9.89 | 8.39 | 6.51 | 2.20 | 359.78 |
| LALITPUR | BUNDELKHAND | 3.79 | 8.68 | 6.49 | 4.61 | 2.22 | 377.33 |
| | BUNDELKHAND Total | 5.49 | 11.48 | 8.79 | 7.48 | 2.48 | 406.25 |
| BARABANKI | CENTRAL | 0.00 | 0.00 | 12.42 | 0.00 | 0.00 | 0.00 |
| HARDOI | CENTRAL | 9.53 | 16.79 | 12.98 | 9.06 | 5.82 | 345.47 |
| KHERI | CENTRAL | 9.68 | 13.66 | 11.15 | 6.83 | 4.39 | 359.41 |
| LUCKNOW | CENTRAL | 9.37 | 16.55 | 12.56 | 11.93 | 4.89 | 353.77 |
| RAEBARELI | CENTRAL | 9.56 | 14.46 | 11.48 | 10.24 | 4.39 | 371.37 |
| SITAPUR | CENTRAL | 7.26 | 15.90 | 11.38 | 7.52 | 4.20 | 394.25 |
| UNNAO | CENTRAL | 8.64 | 16.41 | 11.60 | 11.15 | 3.93 | 406.74 |
| | CENTRAL Total | 11.76 | 18.08 | 11.90 | 10.38 | 4.91 | 400.20 |
| ALLAHABAD | EASTERN | 9.66 | 14.53 | 11.61 | 16.65 | 3.01 | 339.28 |
| AZAMGARH | EASTERN | 8.78 | 15.29 | 11.54 | 7.39 | 4.85 | 364.62 |
| BAHRAICH | EASTERN | 4.86 | 11.55 | 6.85 | 5.33 | 3.61 | 379.14 |
| BALLIA | EASTERN | 8.92 | 14.47 | 10.73 | 10.07 | 4.54 | 339.95 |
| BASTI | EASTERN | 8.13 | 13.27 | 9.97 | 6.99 | 4.65 | 417.90 |
| DEORIA | EASTERN | 11.00 | 16.63 | 13.02 | 7.63 | 4.53 | 4223.92 |
| FAIZABAD | EASTERN | 9.12 | 17.97 | 12.92 | 8.22 | 3.49 | 402.21 |
| FATEHPUR | EASTERN | 9.52 | 17.53 | 12.23 | 12.32 | 4.39 | 339.32 |
| GHAZIPUR | EASTERN | 9.64 | 15.67 | 11.97 | 8.45 | 4.02 | 407.40 |
| GONDA | EASTERN | 7.58 | 13.83 | 9.44 | 7.65 | 3.91 | 379.14 |
| JAUNPUR | EASTERN | 12.46 | 17.34 | 13.85 | 11.00 | 3.03 | 402.21 |
| KANPUR | EASTERN | 10.48 | 23.00 | 15.81 | 13.44 | 5.77 | 338.32 |
| MAHARAJGANJ | EASTERN | 10.01 | 14.90 | 11.95 | 7.15 | 5.42 | 460.63 |
| MIRZAPUR | EASTERN | 9.66 | 10.68 | 9.18 | 8.95 | 2.66 | 386.19 |
| PRATAPGARH | EASTERN | 9.50 | 13.46 | 11.03 | 10.27 | 2.88 | 298.93 |
| SULTANPUR | EASTERN | 7.36 | 15.79 | 10.65 | 9.61 | 2.80 | 301.65 |
| VARANASI | EASTERN | 14.16 | 13.69 | 13.11 | 8.95 | 2.46 | 421.75 |
| | EASTERN Total | 9.16 | 15.22 | 11.29 | 9.94 | 4.31 | 1330.06 |

Annexure 2 (contd...)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|-------------|-------------|---------------|
| AGRA | WESTERN | 12.41 | 17.62 | 13.31 | 9.78 | 7.51 | 383.36 |
| ALIGARH | WESTERN | 10.87 | 22.49 | 16.46 | 7.36 | 5.94 | 348.64 |
| B.SHAHAR | WESTERN | 14.07 | 24.28 | 19.29 | 7.77 | 5.31 | 508.23 |
| BAREILLY | WESTERN | 13.00 | 16.04 | 13.82 | 7.76 | 9.29 | 401.09 |
| BIJNOR | WESTERN | 13.77 | 15.08 | 14.32 | 7.16 | 4.52 | 501.97 |
| BUDAUN | WESTERN | 13.58 | 16.57 | 12.91 | 9.22 | 7.61 | 458.08 |
| ETAH | WESTERN | 10.44 | 19.61 | 13.85 | 10.04 | 5.62 | 458.06 |
| ETAWAH | WESTERN | 10.92 | 23.60 | 14.68 | 14.26 | 5.98 | 338.14 |
| FARRUKHABAD | WESTERN | 8.70 | 16.42 | 11.01 | 11.74 | 5.39 | 420.77 |
| GHAZIABAD | WESTERN | 11.81 | 24.00 | 20.20 | 7.84 | 5.37 | 541.42 |
| MAINPURI | WESTERN | 9.43 | 18.28 | 12.55 | 11.74 | 5.78 | 399.25 |
| MATHURA | WESTERN | 13.49 | 19.07 | 15.07 | 6.68 | 5.72 | 349.82 |
| MEERUT | WESTERN | 13.81 | 22.89 | 20.29 | 7.75 | 5.42 | 541.42 |
| MORADABAD | WESTERN | 13.05 | 17.80 | 14.50 | 7.24 | 4.15 | 549.12 |
| MUZAFFARNAGAR | WESTERN | 14.01 | 23.60 | 20.25 | 5.12 | 16.57 | 605.65 |
| PILIBHIT | WESTERN | 19.96 | 16.68 | 18.10 | 5.39 | 3.82 | 430.99 |
| RAMPUR | WESTERN | 17.27 | 20.35 | 16.98 | 11.52 | 5.34 | 390.37 |
| SAHARANPUR | WESTERN | 17.04 | 17.35 | 16.32 | 5.40 | 8.13 | 525.28 |
| SHAJHANPUR | WESTERN | 12.89 | 17.09 | 14.31 | 8.26 | 4.88 | 420.15 |
| | WESTERN Total | 14.08 | 19.42 | 15.44 | 8.83 | 6.46 | 519.61 |
| | UP | 10.54 | 17.00 | 12.70 | 9.04 | 5.32 | 682.64 |

Annexure – 3: Productivity for the year 1985-86

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|-------------|-------------|---------------|
| BANDA | BUNDELKHAND | 14.53 | 25.20 | 17.29 | 13.60 | 8.17 | 435.20 |
| HAMIRPUR | BUNDELKHAND | 15.87 | 26.83 | 19.81 | 8.51 | 7.42 | 468.24 |
| JALAUN | BUNDELKHAND | 15.07 | 16.58 | 14.49 | 12.13 | 3.57 | 416.35 |
| JHANSI | BUNDELKHAND | 13.15 | 18.30 | 15.26 | 8.09 | 5.53 | 390.00 |
| LALITPUR | BUNDELKHAND | 10.20 | 31.25 | 25.29 | 10.46 | 6.14 | 454.08 |
| | BUNDELKHAND Total | 9.87 | 12.84 | 10.52 | 7.81 | 3.96 | 479.62 |
| BARABANKI | CENTRAL | 9.89 | 15.28 | 10.95 | 6.03 | 4.17 | 364.44 |
| HARDOI | CENTRAL | 10.68 | 16.69 | 13.01 | 9.21 | 4.38 | 392.72 |
| KHERI | CENTRAL | 10.73 | 10.25 | 9.60 | 7.25 | 3.52 | 479.62 |
| LUCKNOW | CENTRAL | 15.07 | 17.63 | 15.79 | 7.89 | 4.50 | 405.84 |
| RAEBARELI | CENTRAL | 18.81 | 20.38 | 18.11 | 10.03 | 6.81 | 505.56 |
| SITAPUR | CENTRAL | 12.88 | 17.66 | 14.63 | 7.61 | 4.89 | 2367.02 |
| UNNAO | CENTRAL | 18.58 | 19.74 | 18.98 | 7.49 | 7.23 | 545.16 |
| | CENTRAL Total | 12.42 | 17.48 | 14.17 | 7.30 | 5.47 | 445.57 |
| ALLAHABAD | EASTERN | 12.61 | 22.48 | 15.27 | 11.20 | 5.48 | 541.12 |
| AZAMGARH | EASTERN | 14.97 | 19.01 | 16.53 | 8.00 | 4.94 | 553.18 |
| BAHRAICH | EASTERN | 11.85 | 22.81 | 16.67 | 11.12 | 6.96 | 452.60 |
| BALLIA | EASTERN | 14.97 | 23.13 | 16.13 | 12.42 | 6.54 | 416.35 |
| BASTI | EASTERN | 17.65 | 21.03 | 18.86 | 8.83 | 3.94 | 457.20 |
| DEORIA | EASTERN | 14.98 | 24.89 | 18.23 | 11.10 | 7.82 | 459.16 |
| FAIZABAD | EASTERN | 14.66 | 18.23 | 14.53 | 11.20 | 4.64 | 416.35 |
| FATEHPUR | EASTERN | 16.77 | 30.09 | 23.56 | 12.35 | 6.16 | 428.60 |
| GHAZIPUR | EASTERN | 14.26 | 19.65 | 16.30 | 11.39 | 3.71 | 356.76 |
| GONDA | EASTERN | 12.16 | 16.68 | 13.55 | 7.53 | 3.95 | 381.88 |
| JAUNPUR | EASTERN | 9.86 | 12.48 | 10.00 | 7.37 | 3.28 | 479.62 |
| KANPUR | EASTERN | 11.85 | 18.58 | 15.02 | 7.18 | 5.96 | 399.84 |
| MAHARAJGANJ | EASTERN | 9.86 | 16.92 | 12.95 | 9.64 | 4.27 | 479.62 |
| MIRZAPUR | EASTERN | 15.15 | 19.17 | 16.21 | 10.38 | 3.42 | 427.88 |
| PRATAPGARH | EASTERN | 9.86 | 13.91 | 11.67 | 7.35 | 5.25 | 479.64 |
| SULTANPUR | EASTERN | 16.96 | 25.59 | 19.29 | 13.95 | 6.48 | 416.35 |
| VARANASI | EASTERN | 14.21 | 18.32 | 15.51 | 5.42 | 4.48 | 456.68 |
| | EASTERN Total | 14.20 | 17.73 | 15.16 | 9.59 | 4.51 | 483.06 |

Annexure 3 (contd....)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|--------------|-------------|---------------|
| AGRA | WESTERN | 4.64 | 13.37 | 10.08 | 6.94 | 3.93 | 479.62 |
| ALIGARH | WESTERN | 11.17 | 18.18 | 14.00 | 7.08 | 8.01 | 405.84 |
| B.SHAHAR | WESTERN | 16.00 | 17.77 | 16.47 | 7.11 | 6.70 | 551.24 |
| BAREILLY | WESTERN | 15.23 | 23.52 | 17.61 | 10.89 | 5.86 | 435.21 |
| BIJNOR | WESTERN | 14.53 | 24.86 | 19.63 | 8.08 | 8.21 | 419.60 |
| BUDAUN | WESTERN | 17.77 | 33.06 | 28.73 | 9.75 | 6.25 | 477.60 |
| ETAH | WESTERN | 11.82 | 8.54 | 10.44 | 9.32 | 2.86 | 531.26 |
| ETAWAH | WESTERN | 17.37 | 21.65 | 18.18 | 9.32 | 5.93 | 511.88 |
| FARRUKHABAD | WESTERN | 26.03 | 28.30 | 26.87 | 6.80 | 6.48 | 568.76 |
| GHAZIABAD | WESTERN | 21.91 | 20.53 | 21.01 | 5.99 | 4.15 | 489.84 |
| MAINPURI | WESTERN | 15.92 | 14.34 | 15.76 | 8.38 | 2.87 | 310.63 |
| MATHURA | WESTERN | 15.31 | 17.19 | 15.04 | 8.77 | 6.89 | 451.84 |
| MEERUT | WESTERN | 20.56 | 25.87 | 21.75 | 8.12 | 6.18 | 473.68 |
| MORADABAD | WESTERN | 24.07 | 24.16 | 22.90 | 6.28 | 6.82 | 518.20 |
| MUZAFFARNAGAR | WESTERN | 16.59 | 22.00 | 18.60 | 7.87 | 4.50 | 462.24 |
| PILIBHIT | WESTERN | 7.06 | 15.63 | 10.93 | 6.29 | 5.46 | 446.52 |
| RAMPUR | WESTERN | 18.30 | 19.65 | 17.83 | 9.46 | 3.13 | 341.52 |
| SAHARANPUR | WESTERN | 9.33 | 16.95 | 12.88 | 8.51 | 6.85 | 457.32 |
| SHAJHANPUR | WESTERN | 16.46 | 17.11 | 16.12 | 9.54 | 2.33 | 353.00 |
| | WESTERN Total | 18.53 | 24.76 | 19.86 | 10.13 | 6.98 | 509.36 |
| | U.P | 14.77 | 20.05 | 16.37 | 8.95 | 5.87 | 495.84 |

Annexure – 4 : Productivity for the year 1990-91

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|--------------|-------------|---------------|
| BANDA | BUNDELKHAND | 10.41 | 12.00 | 10.84 | 8.83 | 5.35 | 376.64 |
| HAMIRPUR | BUNDELKHAND | 9.82 | 15.88 | 13.30 | 85.23 | 4.22 | 41.27 |
| JALAUN | BUNDELKHAND | 0.00 | 20.25 | 16.70 | 10.43 | 6.26 | 286.61 |
| JHANSI | BUNDELKHAND | 9.82 | 18.13 | 15.21 | 8.15 | 5.14 | 383.68 |
| LALITPUR | BUNDELKHAND | 5.23 | 17.22 | 12.79 | 7.59 | 3.23 | 353.89 |
| | BUNDELKHAND Total | 9.80 | 15.82 | 13.02 | 11.89 | 4.72 | 78.22 |
| BARABANKI | CENTRAL | 17.77 | 20.56 | 18.41 | 8.01 | 5.38 | 451.32 |
| HARDOI | CENTRAL | 17.94 | 19.67 | 19.58 | 7.41 | 7.14 | 460.84 |
| KHERI | CENTRAL | 22.13 | 23.35 | 21.71 | 7.01 | 7.24 | 420.52 |
| LUCKNOW | CENTRAL | 16.90 | 20.71 | 18.18 | 6.57 | 5.26 | 451.32 |
| RAEBARELI | CENTRAL | 17.69 | 16.50 | 16.48 | 6.20 | 5.07 | 497.80 |
| SITAPUR | CENTRAL | 16.83 | 19.87 | 17.05 | 6.34 | 6.22 | 436.36 |
| UNNAO | CENTRAL | 15.37 | 18.15 | 16.15 | 6.18 | 6.20 | 330.66 |
| | CENTRAL Total | 18.18 | 19.77 | 18.33 | 6.87 | 6.60 | 430.35 |
| ALLAHABAD | EASTERN | 17.23 | 17.78 | 16.56 | 12.26 | 3.85 | 272.20 |
| AZAMGARH | EASTERN | 17.82 | 21.19 | 19.13 | 10.04 | 8.60 | 407.26 |
| BAHRAICH | EASTERN | 14.13 | 19.65 | 15.26 | 8.44 | 5.25 | 478.64 |
| BALLIA | EASTERN | 11.37 | 18.53 | 14.58 | 10.00 | 3.20 | 496.16 |
| BASTI | EASTERN | 15.47 | 17.98 | 16.26 | 8.86 | 6.81 | 536.79 |
| DEORIA | EASTERN | 18.73 | 20.31 | 19.11 | 7.08 | 7.51 | 560.40 |
| FAIZABAD | EASTERN | 21.13 | 21.42 | 20.86 | 8.40 | 5.32 | 508.00 |
| FATEHPUR | EASTERN | 19.59 | 21.26 | 18.46 | 12.44 | 7.87 | 651.86 |
| GHAZIPUR | EASTERN | 18.31 | 22.61 | 19.82 | 12.31 | 3.33 | 343.16 |
| GONDA | EASTERN | 13.94 | 19.09 | 14.95 | 7.49 | 4.88 | 477.08 |
| JAUNPUR | EASTERN | 17.71 | 21.15 | 17.83 | 11.71 | 2.50 | 405.40 |
| KANPUR | EASTERN | 20.68 | 26.45 | 21.81 | 15.61 | 10.57 | 606.97 |
| MAHARAJGANJ | EASTERN | 14.14 | 18.09 | 17.69 | 6.58 | 8.60 | 549.39 |
| MIRZAPUR | EASTERN | 13.52 | 12.01 | 10.95 | 8.13 | 2.95 | 595.22 |
| PRATAPGARH | EASTERN | 17.88 | 18.19 | 17.13 | 7.64 | 5.18 | 283.70 |
| SULTANPUR | EASTERN | 17.01 | 18.36 | 17.27 | 4.20 | 0.57 | 431.88 |
| VARANASI | EASTERN | 21.28 | 20.21 | 19.90 | 10.13 | 2.52 | 450.92 |
| | EASTERN Total | 16.68 | 19.64 | 17.36 | 9.64 | 5.90 | 497.35 |

Annexure 4 (contd...)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|-------------|--------------|---------------|
| AGRA | WESTERN | 15.99 | 27.27 | 20.14 | 11.15 | 12.00 | 399.37 |
| ALIGARH | WESTERN | 15.06 | 27.15 | 22.30 | 8.75 | 10.81 | 586.64 |
| B.SHAHAR | WESTERN | 16.40 | 29.30 | 26.08 | 9.65 | 9.90 | 572.68 |
| BAREILLY | WESTERN | 21.91 | 16.20 | 21.10 | 7.62 | 6.41 | 557.96 |
| BIJNOR | WESTERN | 27.31 | 23.19 | 24.49 | 5.47 | 6.93 | 604.44 |
| BUDAUN | WESTERN | 16.06 | 23.93 | 18.84 | 6.44 | 6.64 | 555.80 |
| ETAH | WESTERN | 15.54 | 25.91 | 20.15 | 12.27 | 9.72 | 607.16 |
| ETAWAH | WESTERN | 20.09 | 25.58 | 21.04 | 12.45 | 12.32 | 328.45 |
| FARRUKHABAD | WESTERN | 18.62 | 27.31 | 22.24 | 6.47 | 11.29 | 540.32 |
| GHAZIABAD | WESTERN | 20.72 | 29.98 | 25.43 | 12.41 | 9.56 | 608.20 |
| MAINPURI | WESTERN | 18.66 | 25.99 | 21.50 | 11.43 | 8.35 | 252.95 |
| MATHURA | WESTERN | 17.77 | 26.33 | 22.94 | 6.69 | 11.55 | 514.80 |
| MEERUT | WESTERN | 21.34 | 33.66 | 30.28 | 9.49 | 9.59 | 621.28 |
| MORADABAD | WESTERN | 23.55 | 23.84 | 21.32 | 6.50 | 7.34 | 563.08 |
| MUZAFFARNAGAR | WESTERN | 23.83 | 29.21 | 27.52 | 6.37 | 9.59 | 653.04 |
| PILIBHIT | WESTERN | 26.80 | 23.71 | 25.15 | 4.59 | 7.01 | 559.76 |
| RAMPUR | WESTERN | 22.06 | 24.24 | 22.31 | 6.82 | 7.26 | 628.28 |
| SAHARANPUR | WESTERN | 23.93 | 23.05 | 22.41 | 5.42 | 11.85 | 663.00 |
| SHAJHANPUR | WESTERN | 23.54 | 24.67 | 23.12 | 7.00 | 4.93 | 520.08 |
| | WESTERN Total | 22.31 | 25.73 | 22.60 | 8.95 | 10.26 | 603.86 |
| | U.P | 17.96 | 21.67 | 19.01 | 9.76 | 8.20 | 551.77 |

Annexure – 5 : Productivity for the year 1995-96

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|-------------|-------------|---------------|
| BANDA | BUNDELKHAND | 7.25 | 14.99 | 11.43 | 7.35 | 4.37 | 313.81 |
| HAMIRPUR | BUNDELKHAND | 7.18 | 16.07 | 13.35 | 7.54 | 3.96 | 313.81 |
| JALAUN | BUNDELKHAND | 7.18 | 23.83 | 19.94 | 8.06 | 3.66 | 313.81 |
| JHANSI | BUNDELKHAND | 7.18 | 20.90 | 18.39 | 8.14 | 6.30 | 313.82 |
| LALITPUR | BUNDELKHAND | 6.51 | 19.78 | 15.76 | 7.74 | 4.60 | 313.81 |
| | BUNDELKHAND Total | 7.19 | 18.33 | 14.64 | 7.73 | 4.82 | 313.81 |
| BARABANKI | CENTRAL | 19.20 | 21.82 | 19.99 | 6.03 | 7.04 | 547.88 |
| HARDOI | CENTRAL | 18.69 | 25.34 | 21.69 | 6.21 | 6.29 | 516.72 |
| KHERI | CENTRAL | 23.10 | 22.92 | 22.15 | 6.16 | 6.57 | 535.04 |
| LUCKNOW | CENTRAL | 18.79 | 22.24 | 19.75 | 5.63 | 6.74 | 528.08 |
| RAEBARELI | CENTRAL | 16.20 | 19.80 | 17.62 | 6.38 | 7.04 | 512.00 |
| SITAPUR | CENTRAL | 15.61 | 21.63 | 17.88 | 6.12 | 7.00 | 536.44 |
| UNNAO | CENTRAL | 14.38 | 22.45 | 18.42 | 6.37 | 5.28 | 528.07 |
| | CENTRAL Total | 18.43 | 22.56 | 19.78 | 6.16 | 6.45 | 534.35 |
| ALLAHABAD | EASTERN | 14.89 | 21.56 | 17.54 | 11.40 | 5.33 | 436.51 |
| AZAMGARH | EASTERN | 13.14 | 21.80 | 17.56 | 7.30 | 8.68 | 471.36 |
| BAHRAICH | EASTERN | 13.29 | 19.46 | 13.85 | 6.39 | 6.91 | 488.28 |
| BALLIA | EASTERN | 16.94 | 22.51 | 19.34 | 5.08 | 10.04 | 387.84 |
| BASTI | EASTERN | 15.48 | 21.91 | 18.19 | 7.68 | 6.32 | 572.32 |
| DEORIA | EASTERN | 20.91 | 23.37 | 21.90 | 7.77 | 6.62 | 536.10 |
| FAIZABAD | EASTERN | 18.36 | 25.02 | 21.41 | 7.57 | 7.59 | 486.32 |
| FATEHPUR | EASTERN | 17.36 | 23.29 | 19.21 | 9.11 | 7.19 | 436.51 |
| GHAZIPUR | EASTERN | 16.71 | 22.10 | 18.80 | 5.79 | 4.33 | 371.88 |
| GONDA | EASTERN | 17.55 | 22.53 | 18.77 | 7.58 | 5.42 | 517.88 |
| JAUNPUR | EASTERN | 18.41 | 25.39 | 21.34 | 6.92 | 9.65 | 483.04 |
| KANPUR | EASTERN | 18.63 | 27.42 | 22.46 | 9.94 | 11.04 | 477.80 |
| MAHARAJGANJ | EASTERN | 20.64 | 23.15 | 21.71 | 6.89 | 6.75 | 546.95 |
| MIRZAPUR | EASTERN | 14.17 | 17.99 | 14.51 | 8.72 | 2.95 | 520.01 |
| PRATAPGARH | EASTERN | 16.81 | 21.76 | 18.98 | 7.57 | 6.70 | 436.51 |
| SULTANPUR | EASTERN | 15.78 | 20.85 | 18.07 | 6.11 | 6.84 | 562.92 |
| VARANASI | EASTERN | 20.00 | 23.55 | 21.05 | 7.60 | 1.86 | 379.36 |
| | EASTERN Total | 16.93 | 22.58 | 18.96 | 7.95 | 7.10 | 501.68 |

Annexure 5 (contd...)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|-------------|--------------|---------------|
| AGRA | WESTERN | 17.51 | 30.38 | 22.88 | 10.28 | 14.25 | 645.84 |
| ALIGARH | WESTERN | 15.96 | 29.57 | 23.70 | 7.76 | 12.14 | 658.44 |
| B.SHAHAR | WESTERN | 24.14 | 34.34 | 27.40 | 6.45 | 10.83 | 651.80 |
| BAREILLY | WESTERN | 21.56 | 23.94 | 22.17 | 8.40 | 6.09 | 638.76 |
| BIJNOR | WESTERN | 29.72 | 24.57 | 26.30 | 7.78 | 7.32 | 649.12 |
| BUDAUN | WESTERN | 17.21 | 25.36 | 19.60 | 8.13 | 7.75 | 618.24 |
| ETAH | WESTERN | 17.87 | 25.99 | 21.07 | 9.88 | 11.44 | 585.64 |
| ETAWAH | WESTERN | 20.05 | 27.03 | 22.41 | 9.56 | 12.17 | 470.80 |
| FARRUKHABAD | WESTERN | 21.58 | 28.98 | 24.60 | 9.21 | 11.28 | 582.68 |
| GHAZIABAD | WESTERN | 24.78 | 35.15 | 29.66 | 7.79 | 9.83 | 653.56 |
| MAINPURI | WESTERN | 19.74 | 29.29 | 24.00 | 8.50 | 9.50 | 645.84 |
| MATHURA | WESTERN | 16.84 | 31.49 | 26.64 | 7.39 | 12.72 | 574.32 |
| MEERUT | WESTERN | 24.30 | 34.35 | 31.67 | 7.65 | 9.86 | 688.36 |
| MORADABAD | WESTERN | 24.25 | 27.02 | 23.88 | 7.29 | 7.85 | 625.86 |
| MUZAFFARNAGAR | WESTERN | 24.12 | 30.38 | 28.72 | 6.82 | 9.99 | 686.76 |
| PILIBHIT | WESTERN | 27.55 | 27.12 | 27.26 | 8.24 | 5.26 | 628.04 |
| RAMPUR | WESTERN | 25.18 | 33.20 | 28.60 | 10.28 | 9.84 | 595.88 |
| SAHARANPUR | WESTERN | 26.05 | 27.12 | 26.01 | 6.10 | 7.31 | 697.96 |
| SHAJHANPUR | WESTERN | 25.24 | 29.50 | 26.98 | 5.87 | 6.63 | 620.64 |
| | WESTERN Total | 23.42 | 29.01 | 24.74 | 8.36 | 11.25 | 656.12 |
| | UP | 18.54 | 24.69 | 20.84 | 7.74 | 8.67 | 607.16 |

Annexure – 6 : Productivity for the year 2000-01

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|--------------|-------------|---------------|
| BANDA | BUNDELKHAND | 9.79 | 14.31 | 11.73 | 7.21 | 4.08 | 388.97 |
| HAMIRPUR | BUNDELKHAND | 9.93 | 17.40 | 14.94 | 5.43 | 3.84 | 442.22 |
| JALAUN | BUNDELKHAND | 9.79 | 28.82 | 24.57 | 6.83 | 3.64 | 417.19 |
| JHANSI | BUNDELKHAND | 9.79 | 23.17 | 21.64 | 6.37 | 8.06 | 417.16 |
| LALITPUR | BUNDELKHAND | 9.79 | 16.08 | 15.62 | 6.16 | 5.86 | 417.17 |
| | BUNDELKHAND Total | 9.79 | 19.47 | 16.37 | 6.31 | 5.52 | 427.37 |
| BARABANKI | CENTRAL | 17.78 | 28.15 | 22.07 | 8.21 | 8.59 | 561.92 |
| HARDOI | CENTRAL | 16.97 | 27.13 | 22.49 | 6.10 | 5.27 | 550.92 |
| KHERI | CENTRAL | 25.40 | 26.68 | 25.40 | 7.10 | 6.66 | 502.04 |
| LUCKNOW | CENTRAL | 12.68 | 26.05 | 20.38 | 6.62 | 6.51 | 561.93 |
| RAEBARELI | CENTRAL | 15.39 | 21.88 | 18.34 | 8.18 | 6.22 | 478.84 |
| SITAPUR | CENTRAL | 14.25 | 22.30 | 18.00 | 8.03 | 4.94 | 527.64 |
| UNNAO | CENTRAL | 11.33 | 22.77 | 18.56 | 7.27 | 6.91 | 374.30 |
| | CENTRAL Total | 17.30 | 24.94 | 20.91 | 7.46 | 6.10 | 514.82 |
| ALLAHABAD | EASTERN | 18.73 | 22.83 | 19.03 | 12.90 | 4.38 | 428.15 |
| AZAMGARH | EASTERN | 18.57 | 22.59 | 20.51 | 11.71 | 9.13 | 437.77 |
| BAHRAICH | EASTERN | 18.21 | 22.78 | 17.93 | 6.82 | 6.96 | 492.82 |
| BALLIA | EASTERN | 17.32 | 23.74 | 20.15 | 10.50 | 9.89 | 367.28 |
| BASTI | EASTERN | 19.04 | 25.90 | 22.07 | 9.85 | 9.83 | 489.92 |
| DEORIA | EASTERN | 26.58 | 28.60 | 27.30 | 9.43 | 7.50 | 472.43 |
| FAIZABAD | EASTERN | 23.11 | 25.29 | 23.91 | 8.74 | 6.77 | 548.95 |
| FATEHPUR | EASTERN | 17.73 | 23.16 | 19.43 | 11.20 | 6.06 | 472.48 |
| GHAZIPUR | EASTERN | 18.99 | 23.27 | 20.75 | 10.69 | 7.59 | 421.95 |
| GONDA | EASTERN | 17.90 | 24.15 | 19.54 | 7.29 | 7.01 | 486.28 |
| JAUNPUR | EASTERN | 20.50 | 25.76 | 22.72 | 11.53 | 8.45 | 498.64 |
| KANPUR | EASTERN | 17.54 | 30.95 | 24.22 | 14.24 | 10.69 | 474.94 |
| MAHARAJGANJ | EASTERN | 22.05 | 25.99 | 23.90 | 9.23 | 7.27 | 489.45 |
| MIRZAPUR | EASTERN | 17.25 | 17.16 | 15.83 | 7.98 | 3.66 | 695.08 |
| PRATAPGARH | EASTERN | 15.68 | 23.33 | 19.29 | 8.49 | 5.77 | 476.23 |
| SULTANPUR | EASTERN | 20.56 | 25.35 | 22.36 | 11.35 | 6.38 | 463.96 |
| VARANASI | EASTERN | 22.21 | 22.72 | 21.63 | 9.98 | 5.57 | 341.21 |
| | EASTERN Total | 19.89 | 24.51 | 21.28 | 10.13 | 7.35 | 474.44 |

Annexure 6 (contd...)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|-------------|--------------|---------------|
| AGRA | WESTERN | 16.13 | 29.38 | 23.41 | 11.53 | 13.90 | 451.65 |
| ALIGARH | WESTERN | 20.11 | 33.84 | 27.71 | 8.45 | 11.41 | 571.72 |
| B.SHAHAR | WESTERN | 20.17 | 36.74 | 30.34 | 7.21 | 11.96 | 561.59 |
| BAREILLY | WESTERN | 19.37 | 26.90 | 23.02 | 8.53 | 6.98 | 555.81 |
| BIJNOR | WESTERN | 27.85 | 26.65 | 27.07 | 8.97 | 11.00 | 551.16 |
| BUDAUN | WESTERN | 15.36 | 30.51 | 24.14 | 9.08 | 7.44 | 649.64 |
| ETAH | WESTERN | 18.06 | 32.43 | 25.82 | 6.99 | 11.95 | 510.12 |
| ETAWAH | WESTERN | 19.13 | 30.54 | 24.13 | 11.39 | 11.57 | 470.67 |
| FARRUKHABAD | WESTERN | 17.87 | 34.57 | 27.87 | 10.34 | 11.99 | 564.39 |
| GHAZIABAD | WESTERN | 19.82 | 34.52 | 30.26 | 7.35 | 12.26 | 583.84 |
| MAINPURI | WESTERN | 20.18 | 32.60 | 26.59 | 7.06 | 12.00 | 516.28 |
| MATHURA | WESTERN | 20.86 | 34.11 | 28.30 | 7.89 | 11.15 | 475.72 |
| MEERUT | WESTERN | 23.56 | 35.30 | 33.01 | 7.02 | 12.26 | 616.10 |
| MORADABAD | WESTERN | 3.21 | 31.10 | 26.51 | 9.07 | 9.25 | 550.48 |
| MUZAFFARNAGAR | WESTERN | 22.36 | 34.91 | 31.80 | 6.29 | 10.04 | 628.00 |
| PILIBHIT | WESTERN | 26.80 | 32.36 | 29.46 | 8.84 | 6.37 | 557.24 |
| RAMPUR | WESTERN | 22.54 | 36.58 | 29.01 | 9.59 | 9.34 | 581.80 |
| SAHARANPUR | WESTERN | 23.77 | 29.45 | 26.83 | 6.64 | 11.69 | 572.72 |
| SHAJHANPUR | WESTERN | 22.65 | 32.77 | 28.09 | 7.15 | 4.78 | 517.76 |
| | WESTERN Total | 13.16 | 32.34 | 27.00 | 8.76 | 11.19 | 578.70 |
| | UP | 16.90 | 27.24 | 23.03 | 8.03 | 8.25 | 547.20 |

Annexure – 7 : Productivity for the year 2005-06

(Qtl. per ha.)

| Districts | Region | Rice | Wheat | Total Cereal | Pulses | Oilseed | Sugarcane |
|-------------|--------------------------|--------------|--------------|--------------|-------------|-------------|---------------|
| BANDA | BUNDELKHAND | 8.16 | 14.43 | 12.37 | 6.96 | 4.11 | 311.97 |
| HAMIRPUR | BUNDELKHAND | 7.85 | 17.92 | 15.76 | 6.35 | 3.28 | 311.97 |
| JALAUN | BUNDELKHAND | 12.61 | 30.73 | 27.49 | 11.46 | 4.67 | 225.12 |
| JHANSI | BUNDELKHAND | 18.92 | 21.56 | 20.49 | 7.06 | 4.94 | 225.25 |
| LALITPUR | BUNDELKHAND | 6.17 | 16.24 | 14.21 | 9.93 | 6.20 | 225.14 |
| | BUNDELKHAND Total | 8.73 | 19.61 | 16.94 | 7.98 | 4.57 | 290.85 |
| BARABANKI | CENTRAL | 23.25 | 28.99 | 25.36 | 6.98 | 11.10 | 494.44 |
| HARDOI | CENTRAL | 21.85 | 26.64 | 23.44 | 6.68 | 6.36 | 477.44 |
| KHERI | CENTRAL | 22.46 | 27.66 | 24.77 | 8.46 | 7.57 | 567.52 |
| LUCKNOW | CENTRAL | 19.24 | 23.67 | 21.24 | 6.11 | 6.49 | 494.45 |
| RAEBARELI | CENTRAL | 20.83 | 20.58 | 20.16 | 7.25 | 6.15 | 471.24 |
| SITAPUR | CENTRAL | 16.61 | 23.93 | 19.94 | 6.93 | 4.74 | 537.88 |
| UNNAO | CENTRAL | 17.29 | 23.76 | 20.32 | 6.84 | 7.30 | 548.58 |
| | CENTRAL Total | 20.72 | 25.20 | 22.39 | 7.03 | 6.90 | 546.37 |
| ALLAHABAD | EASTERN | 19.52 | 19.75 | 18.89 | 10.55 | 5.86 | 351.41 |
| AZAMGARH | EASTERN | 17.53 | 23.92 | 20.65 | 9.46 | 10.43 | 406.89 |
| BAHRAICH | EASTERN | 18.64 | 23.70 | 18.96 | 6.66 | 8.96 | 500.72 |
| BALLIA | EASTERN | 14.58 | 21.12 | 17.13 | 9.65 | 10.85 | 488.12 |
| BASTI | EASTERN | 17.03 | 24.11 | 20.42 | 10.53 | 10.67 | 578.08 |
| DEORIA | EASTERN | 21.65 | 20.75 | 21.10 | 7.19 | 8.36 | 529.66 |
| FAIZABAD | EASTERN | 24.20 | 28.29 | 26.01 | 9.30 | 11.47 | 542.18 |
| FATEHPUR | EASTERN | 16.24 | 21.54 | 19.23 | 10.11 | 7.00 | 325.79 |
| GHAZIPUR | EASTERN | 19.27 | 21.92 | 20.27 | 10.40 | 10.10 | 464.31 |
| GONDA | EASTERN | 19.39 | 23.90 | 20.07 | 8.83 | 9.47 | 530.33 |
| JAUNPUR | EASTERN | 19.14 | 23.84 | 20.85 | 10.53 | 9.66 | 479.12 |
| KANPUR | EASTERN | 21.52 | 29.50 | 23.97 | 13.01 | 11.51 | 367.06 |
| MAHARAJGANJ | EASTERN | 20.84 | 18.48 | 19.57 | 6.77 | 9.25 | 594.66 |
| MIRZAPUR | EASTERN | 12.78 | 14.54 | 12.70 | 6.59 | 4.52 | 353.52 |
| PRATAPGARH | EASTERN | 17.94 | 20.49 | 18.82 | 7.06 | 6.73 | 331.44 |
| SULTANPUR | EASTERN | 21.29 | 25.81 | 23.10 | 9.63 | 10.48 | 582.96 |
| VARANASI | EASTERN | 19.12 | 19.41 | 18.82 | 8.87 | 5.91 | 427.68 |
| | EASTERN Total | 19.02 | 22.54 | 20.15 | 9.32 | 8.93 | 516.94 |

Annexure 7 (contd...)

| | | | | | | | |
|---------------|----------------------|--------------|--------------|--------------|-------------|--------------|---------------|
| AGRA | WESTERN | 30.15 | 32.18 | 25.45 | 11.39 | 13.97 | 505.12 |
| ALIGARH | WESTERN | 20.81 | 30.53 | 25.35 | 8.28 | 13.21 | 536.66 |
| B.SHAHAR | WESTERN | 22.36 | 33.22 | 27.78 | 8.31 | 12.04 | 570.90 |
| BAREILLY | WESTERN | 18.85 | 25.39 | 21.95 | 6.13 | 6.88 | 565.64 |
| BIJNOR | WESTERN | 26.14 | 27.41 | 26.97 | 7.98 | 11.20 | 604.16 |
| BUDAUN | WESTERN | 17.54 | 27.17 | 21.74 | 7.53 | 12.49 | 633.16 |
| ETAH | WESTERN | 22.02 | 27.65 | 23.80 | 9.59 | 13.90 | 504.04 |
| ETAWAH | WESTERN | 25.53 | 29.86 | 25.48 | 10.81 | 13.02 | 458.39 |
| FARRUKHABAD | WESTERN | 23.34 | 32.35 | 24.93 | 11.12 | 11.90 | 538.60 |
| GHAZIABAD | WESTERN | 23.32 | 35.10 | 31.83 | 8.56 | 12.04 | 525.52 |
| MAINPURI | WESTERN | 23.77 | 32.16 | 26.62 | 10.57 | 11.71 | 505.14 |
| MATHURA | WESTERN | 25.03 | 32.98 | 28.79 | 8.51 | 15.65 | 455.80 |
| MEERUT | WESTERN | 22.92 | 34.68 | 33.12 | 7.58 | 12.03 | 670.51 |
| MORADABAD | WESTERN | 20.49 | 28.35 | 24.10 | 6.86 | 11.27 | 611.54 |
| MUZAFFARNAGAR | WESTERN | 22.76 | 33.63 | 31.60 | 6.26 | 11.40 | 676.60 |
| PILIBHIT | WESTERN | 25.06 | 32.91 | 28.88 | 5.87 | 6.75 | 578.00 |
| RAMPUR | WESTERN | 19.94 | 30.43 | 24.93 | 10.54 | 12.44 | 576.96 |
| SAHARANPUR | WESTERN | 22.95 | 27.03 | 25.20 | 4.52 | 9.15 | 618.88 |
| SHAJHANPUR | WESTERN | 21.21 | 35.10 | 28.62 | 7.41 | 6.54 | 593.76 |
| | WESTERN Total | 21.96 | 30.71 | 25.88 | 8.57 | 12.47 | 618.71 |
| | UP | 19.96 | 25.86 | 22.39 | 8.35 | 9.34 | 584.19 |

Annexure 8: Wheat: District and Region-wise Cost of Cultivation and Income (2005-06)

| S.NO | District | Gross Income per hectare (Rs.) | Per hectare cost of cultivation (Rs.) | Net Income per hectare (Rs.) | Output input ratio |
|------|---|--------------------------------------|---|------------------------------------|-----------------------|
| 1. | JHANSI | 20235.68 | 14279.86 | 5955.82 | 1.41 |
| 2. | LALITPUR | 16383.42 | 10756.79 | 5626.63 | 1.52 |
| 3. | JALAUN | 26871.86 | 20348.96 | 6522.90 | 1.32 |
| 4. | HAMIRPUR+ MAHOBA | 17595.98 | 11865.73 | 5730.25 | 1.48 |
| 5. | BANDA + CHITRAKUT | 15067.43 | 9553.251 | 5514.18 | 1.57 |
| | BUNDELKHAND REGION | 18824.84 | 12989.58 | 5835.26 | 1.44 |
| 6. | KANPUR CITY+ KANPUR DEHAT | 25982.23 | 19535.35 | 6446.88 | 1.33 |
| 7. | FATEHPUR | 20221.95 | 14267.3 | 5954.65 | 1.41 |
| 8. | BARABANKI | 25616.49 | 19200.86 | 6415.63 | 1.33 |
| 9. | LUCKNOW | 21762.84 | 15676.52 | 6086.32 | 1.38 |
| 10. | UNNAO | 21826.54 | 15734.78 | 6091.77 | 1.38 |
| 11. | RAEBARELI | 19520.82 | 13626.09 | 5894.73 | 1.43 |
| 12. | SITAPUR | 21949.14 | 15846.89 | 6102.24 | 1.38 |
| 13. | HARDOI | 23915.74 | 17645.45 | 6270.29 | 1.35 |
| 14. | KHERI | 24648.68 | 18315.75 | 6332.93 | 1.34 |
| | CENTRAL REGION | 23024.93 | 16830.75 | 6194.18 | 1.37 |
| 15. | PRATAPGARH | 19458.57 | 13569.16 | 5889.42 | 1.43 |
| 16. | VARANASI+CHANDAULI+S.RAV IDAS NAGAR | 18675.36 | 12852.87 | 5822.49 | 1.45 |
| 17. | GHAZIPUR | 20497.44 | 14519.25 | 5978.19 | 1.41 |
| 18. | JAUNPUR | 21884.36 | 15787.66 | 6096.71 | 1.38 |
| 19. | MIRZAPUR + SONBHADRA | 15153.61 | 9632.071 | 5521.54 | 1.57 |
| 20. | AZAMGARH + MAU | 21941.84 | 15840.22 | 6101.62 | 1.38 |
| 21. | BALLIA | 19916.40 | 13987.87 | 5928.54 | 1.42 |
| 22. | GORAKHPUR + MHARAJGANJ | 18002.52 | 12237.53 | 5764.99 | 1.47 |
| 23. | DEORIA + KUSHINAGAR | 19647.67 | 13742.1 | 5905.57 | 1.42 |
| 24. | BASTI + SIDDHARTH NAGAR + SANT KABIR NAGAR | 22081.47 | 15967.92 | 6113.55 | 1.38 |
| 25. | FAIZABAD+AMBEDKARNAGAR | 25105.07 | 18733.15 | 6371.93 | 1.34 |
| 26. | SULTANPUR | 23309.84 | 17091.32 | 6218.52 | 1.36 |
| 27. | ALLAHABAD + KAUSHAMBI | 18926.48 | 13082.53 | 5843.95 | 1.44 |
| 28. | GONDA + BALRAMPUR | 21927.23 | 15826.86 | 6100.37 | 1.38 |
| 29. | BAHRAICH + SHRAVASTI | 21780.87 | 15693 | 6087.86 | 1.38 |
| | EASTERN REGION | 20650.84 | 14659.54 | 5991.30 | 1.41 |

Annexure 8 (contd...)

| | | | | | |
|-----|---------------------------------------|-----------------|-----------------|----------------|-------------|
| 30. | SAHARANPUR | 24198.44 | 17903.98 | 6294.45 | 1.35 |
| 31. | MUZAFFARNAGAR | 28972.99 | 22270.54 | 6702.45 | 1.30 |
| 32. | MEERUT + BAGHPAT | 29733.84 | 22966.38 | 6767.47 | 1.29 |
| 33. | GHAZIABAD | 30036.61 | 23243.27 | 6793.34 | 1.29 |
| 34. | BULANDSHAHAR + GAUTAM BUDDHA NAGAR | 28675.37 | 21998.35 | 6677.02 | 1.30 |
| 35. | ALIGARH + HATHRAS | 26731.29 | 20220.4 | 6510.89 | 1.32 |
| 36. | MATHURA | 28506.29 | 21843.72 | 6662.57 | 1.30 |
| 37. | AGRA + FIROZABAD | 27923.06 | 21310.33 | 6612.73 | 1.31 |
| 38. | MAINPURI | 27910.78 | 21299.09 | 6611.68 | 1.31 |
| 39. | ETAH | 24645.37 | 18312.73 | 6332.64 | 1.34 |
| 40. | BAREILLY | 23009.71 | 16816.84 | 6192.87 | 1.36 |
| 41. | BUDAUN | 24294.13 | 17991.5 | 6302.63 | 1.35 |
| 42. | SHAHJAHANPUR | 30038.31 | 23244.82 | 6793.49 | 1.29 |
| 43. | PILIBHIT | 28453.17 | 21795.14 | 6658.03 | 1.30 |
| 44. | BIJNOR | 24467.39 | 18149.96 | 6317.43 | 1.34 |
| 45. | MORADABAD + J.B PHULE NAGAR | 25152.17 | 18776.22 | 6375.95 | 1.33 |
| 46. | RAMPUR | 26653.56 | 20149.31 | 6504.25 | 1.32 |
| 47. | FARRUKHABAD + KANNAUJ | 28050.21 | 21426.61 | 6623.60 | 1.30 |
| 48. | ETAW+AURAIYA | 26244.96 | 19775.63 | 6469.33 | 1.32 |
| | WESTERN REGION | 26857.37 | 20335.71 | 6521.67 | 1.32 |
| | STATE | 25315.79 | 18925.86 | 6389.93 | 1.33 |

Annexure 9 - Rice: District and Region-wise Cost of Cultivation and Income (2005-06)

| S.NO | DISTRICT | Gross Income/ hectare (Rs.) | Per hectare cost of cultivation (Rs.) | Net Income per hectare (Rs.) | Output Input ratio |
|------|---|--------------------------------|--|---------------------------------|-----------------------|
| 1. | JHANSI | 13517.17 | 11957.40 | 1559.77 | 1.13 |
| 2. | LALITPUR | 5464.10 | 3897.29 | 1566.81 | 1.40 |
| 3. | JALAUN | 9534.52 | 7971.27 | 1563.25 | 1.19 |
| 4. | HAMIRPUR+ MAHOBA | 6528.11 | 4962.23 | 1565.88 | 1.31 |
| 5. | BANDA + CHITRAKUT | 6725.07 | 5159.36 | 1565.71 | 1.30 |
| | BUNDELKHAND REGION | 7085.87 | 5520.48 | 1565.39 | 1.28 |
| 6. | KANPUR CITY+ KANPUR DEHAT | 15160.24 | 13601.91 | 1558.33 | 1.11 |
| 7. | FATEHPUR | 11825.80 | 10264.55 | 1561.25 | 1.15 |
| 8. | BARABANKI | 16252.31 | 14694.93 | 1557.384 | 1.11 |
| 9. | LUCKNOW | 13721.59 | 12161.99 | 1559.59 | 1.12 |
| 10. | UNNAO | 12486.36 | 10925.69 | 1560.67 | 1.14 |
| 11. | RAEBARELI | 14725.19 | 13166.47 | 1558.71 | 1.11 |
| 12. | SITAPUR | 12059.64 | 10498.60 | 1561.04 | 1.14 |
| 13. | HARDOI | 15368.41 | 13810.25 | 1558.15 | 1.11 |
| 14. | KHERI | 15755.74 | 14197.92 | 1557.81 | 1.10 |
| | CENTRAL REGION | 14481.61 | 12922.68 | 1558.93 | 1.12 |
| 15. | PRATAPGARH | 12898.09 | 11337.78 | 1560.31 | 1.13 |
| 16. | VARANASI+CHANDAULI+S.RAV IDAS NAGAR | 13643.28 | 12083.62 | 1559.66 | 1.12 |
| 17. | GHAZIPUR | 13736.26 | 12176.68 | 1559.58 | 1.12 |
| 18. | JAUNPUR | 13655.82 | 12096.16 | 1559.65 | 1.12 |
| 19. | MIRZAPUR + SONBHADRA | 9642.53 | 8079.37 | 1563.16 | 1.19 |
| 20. | AZAMGARH + MAU | 12637.82 | 11077.27 | 1560.54 | 1.14 |
| 21. | BALLIA | 10774.84 | 9212.67 | 1562.17 | 1.16 |
| 22. | GORAKHPUR + MHARAJGANJ | 14731.44 | 13172.72 | 1558.71 | 1.11 |
| 23. | DEORIA + KUSHINAGAR | 15239.12 | 13680.85 | 1558.26 | 1.11 |
| 24. | BASTI + SIDDHARTH NAGAR + SANT KABIR NAGAR | 12323.13 | 10762.31 | 1560.81 | 1.14 |
| 25. | FAIZABAD+AMBEDKARNAGAR | 16851.44 | 15294.58 | 1556.86 | 1.10 |
| 26. | SULTANPUR | 15015.19 | 13456.73 | 1558.46 | 1.11 |
| 27. | ALLAHABAD + KAUSHAMBI | 13897.28 | 12337.84 | 1559.44 | 1.12 |
| 28. | GONDA + BALRAMPUR | 13815.87 | 12256.35 | 1559.51 | 1.12 |
| 29. | BAHRAICH + SHRAVASTI | 13342.19 | 11782.26 | 1559.92 | 1.13 |
| | EASTERN REGION | 13585.68 | 12025.96 | 1559.71 | 1.13 |

Annexure 9 (contd...)

| | | | | | |
|-----|---------------------------------------|-----------------|-----------------|----------------|-------------|
| 30. | SAHARANPUR | 16063.31 | 14505.76 | 1557.54 | 1.10 |
| 31. | MUZAFFARNAGAR | 15942.83 | 14385.18 | 1557.65 | 1.10 |
| 32. | MEERUT + BAGHPAT | 16046.69 | 14489.13 | 1557.56 | 1.10 |
| 33. | GHAZIABAD | 16296.42 | 14739.08 | 1557.34 | 1.10 |
| 34. | BULANDSHAHAR + GAUTAM BUDDHA NAGAR | 15688.92 | 14131.04 | 1557.87 | 1.11 |
| 35. | ALIGARH + HATHRAS | 14708.34 | 13149.61 | 1558.73 | 1.11 |
| 36. | MATHURA | 17376.07 | 15819.67 | 1556.40 | 1.09 |
| 37. | AGRA + FIROZABAD | 20609.94 | 19056.36 | 1553.57 | 1.08 |
| 38. | MAINPURI | 16583.25 | 15026.15 | 1557.09 | 1.10 |
| 39. | ETAH | 15474.25 | 13916.19 | 1558.06 | 1.11 |
| 40. | BAREILLY | 13472.39 | 11912.57 | 1559.81 | 1.13 |
| 41. | BUDAUN | 12648.04 | 11087.51 | 1560.53 | 1.14 |
| 42. | SHAHJAHANPUR | 14965.67 | 13407.16 | 1558.50 | 1.11 |
| 43. | PILIBHIT | 17396.28 | 15839.89 | 1556.38 | 1.09 |
| 44. | BIJNOR | 18076.54 | 16520.75 | 1555.78 | 1.09 |
| 45. | MORADABAD + J.B PHULE NAGAR | 14506.86 | 12947.95 | 1558.90 | 1.12 |
| 46. | RAMPUR | 14160.02 | 12600.81 | 1559.21 | 1.12 |
| 47. | FARRUKHABAD + KANNAUJ | 16311.58 | 14754.25 | 1557.33 | 1.10 |
| 48. | ETAW+AURAIYA | 17690.51 | 16134.38 | 1556.12 | 1.09 |
| | WESTERN REGION | 15440.43 | 13882.34 | 1558.09 | 1.11 |
| | U.P | 14960.46 | 13401.94 | 1558.51 | 1.11 |

Annexure 10: Sugarcane: District and Region-wise Cost of Cultivation and Income (2005-06)

| S.NO | District | Gross Income per hectare (Rs.) | Per hectare cost of cultivation (Rs.) | Net Income per hectare (Rs.) | Output input ratio |
|------|---|--------------------------------------|---|------------------------------------|-----------------------|
| 1. | JHANSI | 30506.51 | 15990.51 | 14516.00 | 1.91 |
| 2. | LALITPUR | 30493.03 | 15982.41 | 14510.62 | 1.91 |
| 3. | JALAUN | 30490.27 | 15980.75 | 14509.52 | 1.91 |
| 4. | HAMIRPUR+ MAHOBA | 40753.96 | 22146.36 | 18607.60 | 1.84 |
| 5. | BANDA + CHITRAKUT | 40754.18 | 22146.49 | 18607.69 | 1.84 |
| | BUNDELKHAND REGION | 38258.66 | 20647.38 | 17611.28 | 1.85 |
| 6. | KANPUR CITY+ KANPUR DEHAT | 47264.50 | 26057.37 | 21207.12 | 1.81 |
| 7. | FATEHPUR | 42387.40 | 23127.60 | 19259.80 | 1.83 |
| 8. | BARABANKI | 62316.86 | 35099.64 | 27217.22 | 1.78 |
| 9. | LUCKNOW | 62317.98 | 35100.31 | 27217.67 | 1.78 |
| 10. | UNNAO | 68715.20 | 38943.25 | 29771.95 | 1.76 |
| 11. | RAEBARELI | 59575.19 | 33452.66 | 26122.53 | 1.78 |
| 12. | SITAPUR | 67450.31 | 38183.40 | 29266.91 | 1.77 |
| 13. | HARDOI | 60307.96 | 33892.85 | 26415.11 | 1.78 |
| 14. | KHERI | 70952.94 | 40287.51 | 30665.44 | 1.76 |
| | CENTRAL REGION | 67593.08 | 38269.17 | 29323.91 | 1.77 |
| 15. | PRATAPGARH | 43055.18 | 23528.75 | 19526.43 | 1.83 |
| 16. | VARANASI+CHANDAUJI+S.RAVIDAS NAGAR | 54427.78 | 30360.50 | 24067.28 | 1.79 |
| 17. | GHAZIPUR | 58756.43 | 32960.81 | 25795.62 | 1.78 |
| 18. | JAUNPUR | 60506.43 | 34012.08 | 26494.36 | 1.78 |
| 19. | MIRZAPUR + SONBHADRA | 45664.23 | 25096.06 | 20568.17 | 1.82 |
| 20. | AZAMGARH + MAU | 51970.57 | 28884.41 | 23086.16 | 1.80 |
| 21. | BALLIA | 61570.06 | 34651.02 | 26919.04 | 1.78 |
| 22. | GORAKHPUR + MHARAJGANJ | 74160.12 | 42214.12 | 31946.00 | 1.76 |
| 23. | DEORIA + KUSHINAGAR | 66478.90 | 37599.86 | 28879.04 | 1.77 |
| 24. | BASTI + SIDDHARTH NAGAR + SANT KABIR NAGAR | 72200.84 | 41037.15 | 31163.70 | 1.76 |
| 25. | FAIZABAD+AMBEDKARNAGAR | 67958.70 | 38488.80 | 29469.90 | 1.77 |
| 26. | SULTANPUR | 72777.55 | 41383.59 | 31393.97 | 1.76 |
| 27. | ALLAHABAD + KAUSHAMBI | 45414.54 | 24946.06 | 20468.47 | 1.82 |
| 28. | GONDA + BALRAMPUR | 66557.80 | 37647.25 | 28910.54 | 1.77 |
| 29. | BAHRAICH + SHRAVASTI | 63059.00 | 35545.45 | 27513.55 | 1.77 |
| | EASTERN REGION | 65764.10 | 37170.46 | 28593.64 | 1.77 |

Annexure 10 (contd...)

| | | | | | |
|-----|------------------------------------|-----------------|-----------------|-----------------|-------------|
| 30. | SAHARANPUR | 77022.29 | 43933.49 | 33088.80 | 1.75 |
| 31. | MUZAFFARNAGAR | 83843.21 | 48030.95 | 35812.26 | 1.75 |
| 32. | MEERUT + BAGHPAT | 83123.82 | 47598.80 | 35525.02 | 1.75 |
| 33. | GHAZIABAD | 65989.69 | 37305.98 | 28683.71 | 1.77 |
| 34. | BULANDSHAHAH + GAUTAM BUDDHA NAGAR | 71352.29 | 40527.41 | 30824.89 | 1.76 |
| 35. | ALIGARH + HATHRAS | 67306.13 | 38096.79 | 29209.34 | 1.77 |
| 36. | MATHURA | 57750.78 | 32356.70 | 25394.08 | 1.78 |
| 37. | AGRA + FIROZABAD | 63578.86 | 35857.74 | 27721.12 | 1.77 |
| 38. | MAINPURI | 63581.38 | 35859.26 | 27722.12 | 1.77 |
| 39. | ETAH | 63451.37 | 35781.16 | 27670.21 | 1.77 |
| 40. | BAREILLY | 70730.77 | 40154.04 | 30576.73 | 1.76 |
| 41. | BUDAUN | 78709.82 | 44947.22 | 33762.60 | 1.75 |
| 42. | SHAHJAHANPUR | 74053.78 | 42150.24 | 31903.54 | 1.76 |
| 43. | PILIBHIT | 72191.38 | 41031.46 | 31159.92 | 1.76 |
| 44. | BIJNOR | 75282.79 | 42888.53 | 32394.25 | 1.76 |
| 45. | MORADABAD + J.B PHULE NAGAR | 76154.34 | 43412.09 | 32742.25 | 1.75 |
| 46. | RAMPUR | 72068.48 | 40957.63 | 31110.85 | 1.76 |
| 47. | FARRUKHABAD + KANNAUJ | 67535.84 | 38234.78 | 29301.06 | 1.77 |
| 48. | ETAW+AURAIYA | 58057.25 | 32540.80 | 25516.45 | 1.78 |
| | WESTERN REGION | 77002.57 | 43921.64 | 33080.93 | 1.75 |
| | STATE | 76311.22 | 43506.34 | 32804.89 | 1.75 |